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CONTENTS OF VOL. IV.

PART I.

Page

On some Tertiary Fossils. By the Rev. J. E. Tenison-Woods, F.G.S. ... 1

On some New Marine Shells. By the Rev. J. E. Tenison-Woods, F.L.S., &c. ... 21

On some Freshwater Shells from New Guinea. By the Rev. J. E. Tenison-Woods, F.L.S., &c. ... 24

On some of the Introduced Plants of Queensland. By F. M. Bailey, F.L.S., &c. ... 26

On a New Species of Fern, *Asplenium Prenticei*. By F. M. Bailey, F.L.S., &c. ... 36

On the Australian species of *Penæus*. By William A. Haswell, M.A., B.Sc. ... 38

Contributions towards a Monagraph of the Australian *Leucosiidæ*. By W. A. Haswell, M.A., Bc. ... 44

Notes on some Fishes from the Solomon Islands. By William Macleay, F.L.S., &c. ... 60

Notes on the Zoology of the Solomon Islands, Part I. *Aves*. By E. P. Ramsay, F.L.S., &c. ... 65

Contributions to the Zoology of New Guinea, Part IV. and V. By E. P. Ramsay, F.L.S., &c. ... 85

The proposed Zoological Station at Sydney. By N. de Miklouho-Maclay ... 103

On some New Marine Shells from Moreton Bay. By the Rev. J. E. Tenison-Woods, F.G.S., F.L.S., &c. ... 108

On *Araujα albens*, Don. By the Rev. J. E. Tenison-Woods, F.G.S., F.L.S., &c. ... 111

On a Micro-Lepidopterous Insect, destructive to the Potato. By E. Meyrick, B.A. ... 112

On two New Species of *Helix*, from the Louisade Archipelago. By J. C. Cox, M.D., F.L.S., &c.... 114

a 69324

PART II.

Page.
On the Relations of the Brisbane Flora. By the Rev. J. E. Tenison-Woods, F.G.S., F.L.S., &c. 117
A Census of the Flora of Brisbane. By F. M. Bailey, F.L.S., &c., and the Rev. J. E. Tenison-Woods, F.L.S., F.G.S., &c. 137
Descriptions of Australian Micro-Lepidoptera, Part II., *(Crambites)*. By E. Meyrick, B.A. 205
Notes on *Cypræa Guttuta*. By James Hobson 243
Exhibits 244

PART III.

Page.
On the Australian *Amphipoda*. By William A. Haswell, M.A., B.Sc. Plates 7—12.. 245
Notes on the Phyllosoma Stage of *Ibacus Peronii*. By William A. Haswell, M.A., B.Sc.. 280
On some new Australian *Echini*. By the Rev. J. E. Tenison-Woods, F.L.S., F.G.S. &c. Plates 13 and 14........................ 282
On *Doris arbutus*, Angas. By Reginald Bligh Read, M.R.C.S. Eng. Plate 17.. 291
On *Heterosammia Michelinii*, Edw. and Haime. By the Rev. J. E. Tenison-Woods, F.L.S., F.G.S. &c. Plate 15................ 293
On a new species of *Disticophora*. By the Rev. J. E. Tenison-Woods, F.L.S., F.G.S., &c.. 301
Notes on the Anatomy of Birds. By William A. Haswell, M.A., B.Sc. 303
Notes on Birds from the Solomon Islands, &c. By E. P. Ramsay, F.L.S. 313
On the Australian *Amphipoda*, 2nd Paper. By William A. Haswell, M.A., B.Sc. Plates 18—24................................ 319
On the *Cyclostomatous Polyzoa* of Port Jackson and Neighbourhood. By William A. Haswell, M.A., B.Sc......................... 350
On the species of *Phalacrocorax*. By Professor F. W. Hutton, Otago, New Zealand.. 356
On some Fossils from Fiji. By the Rev. J. E. Tenison-Woods, F.G.S. F.L.S., &c.. 358
On some Post Tertiary Fossils from New Caledonia. By the Rev. J. E. Tenison-Woods, F.G.S., F.L.S., &c..................... 360
On the *Clupeidæ* of Australia. By William Macleay, F.L.S. &c.... 363
On the genus *Cypræa*. By James C. Cox, M.D., F.L.S. &c........ 385
Notes and Exhibits........................Pages 292, 210, 356, and 387

PART IV.

Page.

Synonymy of, and remarks upon Port Jackson, New Caledonian and other Shells, with their distribution. By John Brazier, C.M.S., Corr. Mem. Roy. Soc. Tas., &c. 388

List of Land Shells found on Thursday Island, with descriptions of the new species. By John Brazier, C.M.Z.S., &c., &c. ... 392

Note on an undetermined species of *Lalage*. By E. P. Ramsay, F.L.S., Corr. Mem. Royal Society, Tasmania, &c. 396

List of *Brachiopoda* or Lamp Shells, found in Port Jackson, and on the coast of New South Wales. By John Brazier, C.M.Z.S., &c. 399

Note supplementary to a paper on the Australian *Leucosiidæ*. By William A. Haswell, M.A., B.Sc. 403

On the Geology of Yass Plains, 3rd paper. By C. Jenkins, L.S. 404

On the *Mugilidæ* of Australia. By William Macleay, F.L.S., &c... 410

On Tropical *Mollusca* recently dredged at Port Jackson Heads. By J. Brazier, C.M.Z.S., &c., &c... 428

Note on *Oniscia ponderosa*, with its locality. By John Brazier, C.M.Z.S., &c. 431

On the Australian *Brachyura Oxyrhyncha*. By William A. Haswell, M.A., B.Sc., Plates 25 to 27 431

Notes on the Abercrombie Caves. By C. S. Wilkinson, L.S., F.G.S., 469

Contributions to the Zoology of New Guinea, Part VI. By E. P. Ramsay, F.L.S., &c. 464

Notes and Exhibits, ...Pages 387, 397, 408, 458, 463, and 471

Annual Address by the President 471

List of Office-bearers 492

Title Page, Contents, Index, &c., to Vol. IV.

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I. The Linnean Society of New South Wales, is instituted for the cultivation and study of the Science of Natural History, in all its branches.

II. The Society shall consist of Ordinary, Corresponding, and Honorary Members. Gentlemen not resident in New South Wales, who shall have contributed valuable information or specimens to the Society, shall be eligible for appointment as Corresponding Members, at the discretion of the Council. Honorary Membership shall be conferred only on distinguished Naturalists not resident in New South Wales.

III. The Officers of the Society shall consist of a President, Vice-President, Secretary, and Treasurer.

IV. The affairs of the Society shall be conducted by a Council consisting of six Members (in addition to the office-bearers), to be elected each year, at the Annual General Meeting.

V. The President, Vice-President, Secretary, and Treasurer, shall be elected in like manner, at the Annual General Meeting.

VI. It shall be the duty of the Secretary to keep a list of all Members, and a record of all correspondence, transactions, and proceedings of the Society.

VII. The Treasurer's duty shall be to receive all payments made to the Society, and disburse all sums payable by the Society out of the funds in his hands. He shall furnish the Society annually, with an account of all such receipts and disbursements. He shall demand all arrears of annual subscription, after such shall have been due three months.

No payments shall be made by the Treasurer, except for rents and taxes, without the sanction of the Council.

VIII. Candidates for admission to this Society shall be proposed and seconded at an Ordinary Meeting, and shall be balloted for at the next Ordinary Meeting: Two-thirds of the Members balloting shall elect.

IX. The Annual Subscription shall be £1 1s., payable on the 1st January of each year. And all joining after the close of the present year, (1874), shall pay an entrance fee of £1 1s. in addition to their annual subscription.

X. No Member whose subscription shall be three months in arrear shall participate in the advantages offered by the Society.

XI. At Ordinary Meetings of the Society any Member present shall have the privilege of introducing one visitor, who, with the permission of the Chairman, shall be allowed to take part in the discussion.

XII. The Ordinary Meetings shall be held each month, at such time and place as the Council shall appoint.

The order of business shall be as follows :—

1 Names of Visitors present shall be read aloud by the Chairman.

2 The minutes of the last meeting shall be read, proposed for confirmation to the Meeting, and signed by the Chairman.

3 Candidates for admission shall be proposed, and those proposed at the preceding Meeting shall be balloted for.

4 Papers and written communications shall be read and discussion thereon invited, which may be limited by the Chairman.

5 The Meeting shall conclude with the examination of such specimens, drawings, &c., as may then be exhibited. And no business connected with the management or finance of the Society shall be introduced at any such Meeting.

XIII. Authors of papers must notify their intention of reading such, together with the subject thereof, to the Secretary, seven days before the next Ordinary Meeting; and the Secretary shall issue notice of the papers to be read at each Meeting, in the order in which he shall have received notice of the same.

XIV. Upon the requisition of any six Members presented to the President and Council, through the Secretary, a Special General Meeting shall be convened,—and any proposition to be submitted to such Meeting shall be stated at length in the notice to Members, and of any such Meeting, not less than seven days' notice shall be given.

XV. The Annual General Meeting shall be held in January, the place and time of meeting to be fixed by the Council. The objects of the Meeting shall be to choose the Council and Officers for the ensuing year, and to hear the Annual Report on the general concerns of the Society.

* * *

ERRATA.

Page 137—	For Polypelata	Read, *Polypetalæ*
„ 140—	„ Capparidæ	„ *Capparideæ*
„ „	„ Violareæ	„ *Violarieæ*
„ 142—	„ 17th line	„ *oxycarpum*
„ „	„ 28th line	„ *tiliaceus*
„ 144—	„ 12th line	„ *Zieria*
„ „	„ 24th line	„ *difformis*
„ 147—	„ 29th line	„ *foveolatum*
„ 150—	„ 19th line	„ *Baileyi*
„ 153—	„ 15th line	„ *podalyriæfolia*
„ „	„ 23rd line	„ *aulacocarpa*
„ „	„ 29th line	„ *Albizzia*
„ 154—	„ 9th line, 2nd word ...	„ *Endl.*
„ „	„ 28th line, 2nd word ...	„ *Brongn.*
„ 155—	„ 2nd line	„ *variæfolium*
„ „	„ 8th line	„ *Monochlamydeæ*
„ „	„ 13th line	„ *Bruguiera*
„ 157—	„ 26th line	„ *Lythrum*
„ 160—	„ 7th line	„ *dictyophlebus*
„ 161—	„ 7th line, 3rd word ...	„ *Linn.*
„ „	„ 10th line	„ *vacciniifolium*
„ „	„ 17th line	„ *Psychotria*
„ 162—	„ 2nd line	„ *geminifolia*
„ „	„ 10th line	„ *melitensis*
„ „	„ 14th line	„ *lanceolatus*, ***Willd.***
„ 163—	„ 13th line	„ *Pterocaulon*
„ „	Take the asterisk from Epaltes australis	
„ 164—	Take the asterisk from Helipterum polyphyllum	
„ 169—	For 13th line	Read, *Carissa*
„ 170—	„ 28th line	„ *Limnanthemum*
„ „	„ 15th line	„ *Spreng.*
„ 177—	Take the asterisk from Polygonum strigosum	
„ 179—	For 28th line, 2nd word ...	„ *Baillon*
„ „	„ 32nd line, 2nd word ...	„ *Brongn*
„ 180—	„ 1st line, 2nd word ...	„ *Miq.*
„ „	„ 2nd line, 2nd word ...	„ *Miq.*
„ „	„ 7th line, 2nd word ...	„ *Brongn.*
„ „	„ 31st line, 2nd word ...	„ *Baillon*
„ „	„ 32nd line, 2nd word ...	„ *Baillon*
„ 181—	„ 2nd line, 2nd word ...	„ *Baillon*
„ „	„ 22nd line, 2nd word ...	„ *Baillon*
„ 182—	„ 2nd line, 2nd word ...	„ *Miq.*
„ 183—	„ 2nd line, 2nd word ...	„ *Miq.*
„ „	„ 19th line, 2nd word ...	„ *Gymnospermæ*
„ 184—	„ 1st line, 2nd word ...	„ *Miq.*
„ „	„ 18th line	„ *cærulea*

„	184—		28th line take out Sm.		
„	185—	„	27th line, 7th word ...	„	*Bernaysii*
„	186—	„	31st line	„	*Caleana*
„	187—	„	12th line	„	*cærulea*
„	188—	„	25th line	„	*cærulea*
„	191—	„	15th line	„	*macrorrhiza*
„	196—	„	23rd line	„	*Baileyi*
„	197—	„	7th line	„	*trachyrhachis*
„	198—	„	2nd line	„	*triticeum*
„	„	„	11th line, 2nd word ...	„	*Willd.*
„	„	„	27th line	„	*Arundinella*
„	200—	„	15th line	„	*leptostachya*
„	202—	„	1st line, 2nd word ...	„	*Brongn.*
„	„	„	2nd line	„	*thalictroides, Brongn.*
„	„	„	11th line	„	*3 mile scrub*
„	„	„	22nd line, 2nd word ..	„	*Bailey*
„	203—	„	17th line	„	*serrulatum*

ASTUR BRACHYURUS, *sp. nov.*, page 465—The Habitat is *New Britain*, where it was collected by Lieut. Richards, R.N., August 15th 1879.

In the measurements, page 465, line 20 for "first-joint 7·5," *read* first-joint 0·75; "hind-toe s.u. 8·5" *read* hind-toe (s.u.) 0·85; line 21, for "above the curve," *read* along the curve.

Add. "Sex ♀, Iris scarlet, legs and feet, yellow; bill, black; New Britain, August 15th, 1879." *(Richards.)*

OTIDIPHAPS CERVICALIS, *sp. nov.*, page 470, line 10 from the bottom, for Dr.

INDEX TO VOL. IV.

Page
Abrophyllum ornans ... 154
Abutilon otocarpum ... 142
Acacia amblygona 153
  aulocarpa 153
  bruniades 153
  complanata 153
  Cunninghami ... 153
  decurrens 153
  doratoxylon 153
  falcata 153
  fasciculifera 153
  glaucescens 153
  implexa 153
  juniperina 153
  linifolia 153
  longifolia 153
  pauciglandulosa ... 153
  penninervis 153
  polybotrya 153
  podalyriafolia ... 153
  pugioniformis ... 153
  spectabilis 153
Acalypha eremorum ... 181
  nemorum... ... 181
Acanthurus triostegus ... 64
Accipiter cirrhocephalus ... 95
Achæus breviceps 433
Achras australis 168
  laurifolia 168
  myrsinoides... ... 168
  Pohlmaniana ... 168
Achyranthes aspera... ... 176
Acianthus fornicatus ... 187
Acrostichum aureum ... 204
  spicatum ... 204
Achroea grisella 242
Acronychia Baueri 145
  imperforata ... 145
  lævis 145
Acrotiche aggregata ... 167
  divaricata... ... 167
Actæomorpha erosa ... 59
Actinotus Helianthi ... 159
Actitis hypoleucos 101
Adenostemma viscosum ... 162
Adiantum æthiopicum ... 202
  formosum ... 202
  hispidulum ... 202

Page
Adrastæa salicifolia... ... 138
Ægialitis fluviatilis ... 93, 101
  Geoffroyi 101
  mongolus ... 92, 101
Ægiceras majus 168
Ægotheles Bennettii 88, 97
Æsopus crebrecostatus ... 15
  semicostatus ... 14
Æschynome falcata 151
Ageratum conyzoides 28, 162
  mexicanum ... 28
Agonostoma darwiniense ... 425
  diemensis ... 425
  Forsteri ... 425
  lacustris ... 425
Agropyrum scabrum ... 201
Ailurœdus Stonei 97
Ajuga australis 175
  genevensis 175
Akania Hillii 148
Albizza Lebbeck 153
Alchornea ilicifolia 181
Alcyone affinis 96
  pusilla 96
Alisma oligococcum... ... 192
Allorchestes compressa ... 251
  crassicornis 252, 277
  Gaimardi ... 251
  longicornis 251, 277
  niger 319
  rupicola 250, 278
Alopecias vulpes 458
Alphitonia excelsa 146
Alpinia cœrulea 184
Alsophila australis 202
Alternanthera denticulata ... 176
  nana 176
  nodiflora ... 176
Alyxia pugioniformis ... 169
  ruscifolia 169
Amaranthus interruptus ... 176
  panniculatus ... 176
  viridis 176
Amaryllis brevicornis ... 254
  macrophthalmus 253, 278
Amblypneustes formosus ... 289
  griseus ... 289
  ovum ... 289

Page
Amblypneustes pallidus ... 289
Amoora nitidula 145
Ampelisca australis ... 257, 278
Amphithoë cinerea ... 269, 279
  grandimanus ... 270
  quadrimanus 337, 350
  setosa 270
Anagalis arvensis 167
Anas castanea 102
  superciliosa 102
Ancylolomia Westwoodii 208, 240
Andropogon affinis 198
  bombycinus ... 198
  intermedius ... 198
  lachnatherus ... 198
  pertusus ... 198
  refractus ... 198
  sericeus ... 198
Aneilema acuminatum ... 190
  biflorum ... 190
  gramineum ... 190
Anerastia mirabilella 233, 242
  psamathella 234, 242
  sceletella 233

Page
Ariadna acerifolia 181
Aristida arenaria 199
  leptopoda 199
  ramosa 199
  vagans 199
Aristolochia pubera... ... 183
Arses enado 98
Artamus leucopygialis ... 98
Artanema fimbriatum ... 172
Anthropodium dianellaceum ... 189
  panniculatum... 189
Arundinella nepalensis ... 198
Asclepias curassavica ... 30
Asperula conferta 162
  guninifolia ... 162
Aspidium cordifolium ... 203
  decompositum ... 203
  molle 203
  tenericaule ... 203
  unitum 203
Asplenium attenuatum ... 203
  falcatum ... 203
  flabellifolium ... 203
  nidus 203

Page
Banksia latifolia 179
Barklya syringifolia... ... 152
Baza Reinwardti 66, 95
Bertya pinifolia 180
Beyeria viscosa 180
Bidens bipinnata 164
pilosa ... 35, 164
Billardiera scandens ... 141
Blechnum cartilagineum ... 203
serrulatum ... 203
Blumea hieracifolia... ... 163
lacera 163
Boerhaavia diffusa 177
Bolbophyllum aurantiaceum ... 185
Boronia falcifolia 144
ledifolia 144
polygalifolia ... 144
robusta 144
rosmarinifolia ... 144
Bossiæa ensata 149
rupicola 149
Bosistoa sapindiformis ... 144
Botrychium ternatum ... 201
Bouchardia fibula 400
Brachycome microcarpa ... 163
Brachyloma daphnoides ... 166
Brasenia peltata 139
Breynia australasiæ... ... 290
oblongiflora ... 180
Brisbania Staigeri ... 364, 370
Brissus carinatus 290
Briza maxima 200
minor 200
Brugiera Rheedii 155
Brunonia australis 166
Bryonia laciniosa 158
Buchnera urticifolia ... 172
Buccinulus coccinatus ... 429
Buccinum coronatum ... 428
Bulbine bubbosa 189
semibarbata... ... 189
Bulimus Beddomei 394
Macleayi 394
senilis 356
Burchardia umbellata ... 189
Burmannia disticha... ... 187
Bursaria spinosa 140
Butoroides flavicollis ... 102
javanica... 84, 102
Cacatua Ducorpsii 68
galerita 91, 96
Cacomantis dumetorum ... 96
assimilis ... 96
Cæsalpinia sepiaria... 32, 152

Page
Cæsia parviflora 189
Caladenia cærulia 187
carnea 187
Calænas nicobarica ... 94, 95, 101
Calamus Muélleri 191
Calanthe veratrifolia ... 185
Calcana major 186
Callicarpa pedunculata ... 174
Callistemon lanceolatus ... 155
salignus ... 155
Callitriche verna 155
Calochilus campestris ... 186
paludosus ... 186
Calornis cantoroides 76, 99
metallica 77, 99
Calotis cuneifolia 163
dentex 163
lappulacea 163
Campephaga Boyeri ... 100
Jardinii ... 315
karu 315
leucomela ... 315
polygrammica ... 316
rufiventris 89, 100, 315
Sloetii 100
Camposcia retusa 433
Canavalia obtusifolia ... 152
Cancellaria laticostata ... 17
Cancer fornicatus 454
longipes 439
Capparis lasiantha 140
nobilis 140
sarmentosa ... 140
Caprella cornigera ... 347, 350
echinata ... 346, 350
inermis ... 348, 350
obesa ... 348, 350
tenuis ... 276, 279
Caprimulgus macrourus ... 97
Capsella didyma 140
Caranx calla 63
Carcharodon Rondeletii ... 459
Cardamine hirsuta 139
Cardium fornicatum 391, 398
medium 391
Carduus marianus ... 28, 162
Carex acuta 196
declinata 196
gracilis 196
inversa 196
longifolia 196
maculata 196
paniculata 196
pumila 196

Page
Carex vulgaris 196
Carpesium cernuum... ... 162
Carpophaga magnifica ... 318
Mulleri ... 100
pacifica.. 95, 101
pinon 101
pristinaria .. 72
rufigula .. 72
rufiventris .. 101
spilorrhoa 95, 101
Vanwickii 94, 101
zoeæ 101
Carumbium populifolium .. 181
stillingiæfolium .. 181
Casearia esculenta 158
Cassia australis 152
concinna 153
lævigata .. 32, 152
mimosoides 153
sophera 152
suffruticosa 152
Cassinia lævis 164
Cassis exigua 17
nana 108

Page
Cerissa ovata 169
Cerithiopsis Angasii .. 388
clatharata .. 388
Cerithium anguliferum .. 388
eusmilia 5
salteriana .. 5
Ceroprepis almella 241
Ceyx solitarius 96
Chalcites plagosus 70
Chalcophaps chrysochlora 73, 95, 101
helviventris .. 470
jobiensis 94, 101
Stephani .. 101
Chalcopsittacus chloropterus.. 96
Chamæraphis spinescens .. 197
Chanos salmoneus .. 365, 383
Chatoëssus Erebi .. 364, 368
Richardsoni 364, 369
Cheilanthes Sieberi 203
tenuifolia .. 203
Chenopodium ambrosioides 35, 176
carinatum .. 176
murale .. 176
triangulare .. 176

Page
Citriobatus multiflorus 140
Citrus australis 145
Cladium articulatum .. 195
  glomeratum .. 195
  junceum 195
  teretifolium .. 195
Clanculus undatoides ..22, 24
Claoxylon australe 181
Cleisostoma tridentatum .. 185
Cleistanthus Cunninghamii .. 180
Clematis glycinoides .. 138
  microphylla .. 138
Clerodendron tomentosum .. 174
Clupea hipseloosoma.. 364, 375
  Kunzei 64
  macassariensis .. 381
  moluccensis .. 364, 376
  novæ-hollandiæ 364, 378
  Richmondia .. 364, 380
  sagax .. 364, 371
  Schlegellii .. 364, 380
  Sundaica .. 364, 373
  tembang .. 364, 379
  vittata .. 364, 379
Cnicus lanceolatum 162
Cœlospermum panniculatum.. 161
Collocalia spodiopygia .. 97
Colluricincla brunnea .. 99
  megarhyncha .. 99
Colocasia macrorrhizæ .. 191
Clomastix Brazieri .. 341, 350
Columbella hemiothone .. 14
Comesperma ericinum .. 141
  retusum .. 141
  sphærocarpum .. 141
Cominella alveolata.. .. 390
  costata 390
Commelyna cyanea 190
Commersonia echinata .. 143
Condonocarpus australis .. 175
Conopophila albogularis .. 100
Conospermum taxifolium .. 178
Conus pullulascens 3
Convolvulus erubescens .. 171
  marginatus .. 171
Conyza ægyptiaca 163
  viscidula 163
Corbula Smithiana 388
  venusta 388
Corchorus Cunninghamii .. 143
Cordyline terminalis .. 189
Corvus orru 98
Corysanthes bicalcarata .. 186
Cotula australis 164
Cracticus cassicus 99

Page
Cracticus mentalis 99
  Quoyii 96
Crambus apicistrigellus 209, 240
  argyroneurus 214, 240
  aurantiacus .. 240
  aurosus 240
  bifractellus 210, 240
  bivittellus 240
  concinellus.. .. 240
  cuneiferellus .. 240
  dimidiellus .. 240
  eneagrammos 214, 240
  grammellus 213, 240
  halterellus 240
  hoplitellus 240
  implectellus 210, 240
  invalidellus .. 240
  lativittalis 240
  longipalpellus 212, 240
  milvellus 240
  opulentellus .. 240
  perlatalis .. 213, 240
  pleniferellus 212, 240
  recurvellus.. .. 240
  relatalis .. 213, 240
  torrentellus .. 240
  trivittatus 240
Crantzia lineata 159
Craspedia chrysantha .. 164
Craspedophora Alberti .. 94
  magnifica .. 94
Crepis japonica 165
Crinum pedunculatum .. 188
Crisia denticulata 355
  incurva 355
  punctifera 355
  tubulosa 356
Crossea parvula 4
Croton insularis 180
  Verreuxii 180
Crotalaria incana 150
  linifolia 149
  Mitchellii .. 149
  trifoliastrum .. 150
Cryptocarya australis .. 178
  glaucescens .. 177
  obovata .. 177
  triplinervis .. 178
Cryptopodia fornicata .. 454
  spatulifrons .. 454
Cryptostemma calendulacea 27, 165
Cryptostylus longifolia .. 186
Ctenodon ctenodus 387
Cuculus canoroides 89, 96
Cucumaria pentagona .. 274

Page
Cudrania javanensis .. 182
Cupania anacardioides .. 147
  nervosa 147
  pseudorhus .. 147
  semiglauca .. 147
  serrata 147
  tomentella 147
  xylocarpa 147
Curculigo ensifolia 188
Cuscuta australis 171
  europea 171
Cyclomaia margaritata .. 441
Cyclopsittacus cervicalis ..92, 96
  suavissimus .. 96
Cylichna exigua 19
Cynodon dactylon .. 35, 199
Cynoglossum australe .. 171
  latifolium .. 171
Cyperus Bowmanni.. .. 193
  concinnus 193
  congestus 193
  difformis 193
  distans 193
  enervis 193
  eragrostis 193
  exaltatus 193
  fulvus 193
  globosus 193
  Haspan 193
  lævis 193
  lucidus 193
  pilosus 193
  polystachyus .. 193
  rotundus 193
  tetraphyllus .. 193
  umbellatus.. .. 193
  unioloides 193
Cypræa annulus 386
  arabica 386
  Barthelemyi .. 386
  Bregariana .. 356
  Crossei 386
  eburna 243
  eglantina 386
  erosa 243
  guttata 243
  knomeensis .. 386
  Lamarckii 243
  moneta 386
  stolida 386
  spadicea 409
  umbilicata.. .. 386
  vitellus 243
Cyproidia lineata .. 321, 349
  ornata .. 320, 349

Page
Cyrtophium dentatum 342, 350
  minutum 343, 350
  parasiticum 274, 279
Cyrtostylis reniformis .. 187
Dacelo Gaudichaudii .. 97
  Leachii 97
Dampiera stricta 166
Danais erippus 30
Danthonia longifolia .. 199
Datura stramonium.. .. 31
Daucus brachiatus 159
Davallia dubia 202
  pyxidata 202
Decamerus mysticus .. 311
Demiegretta sacra 102
Dendrobium æmulum .. 184
  gracilicaule .. 185
  Hillii 184
  linguiforme .. 185
  monophyllum .. 185
  Morti 185
  pugioniforme .. 184
  speciosum .. 184
  striolatum .. 184
  teretifolium .. 185
  tetrogonum .. 184
Dendrochelidon mystacea ..89, 97
Dendrocygna vagans .. 102
Denhamia pittosporoides .. 146
Dentella repens 160
Derris scandens 152
Desmodium brachypodum .. 151
  nemorosum .. 151
  parvifolium .. 151
  polycarpum .. 151
  rhytidophyllum 151
  varians .. 151
Deyeuxia Fosteri 199
Diadema setosum 288
Dianella cærulia 188
  lævis 188
  revoluta 188
Dicæum erythrothorax .. 77
  rubrocoronatum .. 98
Dichelachne crinita.. .. 199
Dichondra repens 171
Dichopogon strictus .. 189
Dicksonia davallioides .. 202
Dicrurus bracteatus ..91, 98
  carbonarius .. 98
Didunculus strigirostris .. 308
Dillwynia ericifolia.. .. 149
  juniperina .. 149
Dione affinis 447
Dioscorea transversa .. 188

Page
Diploglottis Cunninghamii .. 147
Diptychophora dilatella 217, 240
    præmaturella 217, 240
Discoporella ciliata 354
    complicata .. 354
    novæ-zealandiæ .. 353
    porosa 354
    tridentata .. 355
Dissiliaria baloghioides .. 180
Distichopora coccinea .. 303
    gracilis .. 302
    livida .. 301, 303
    rosea 303
    violacea 302, 303
Dodonæa cuneata 148
    triquetra 148
    viscosa 148
Doodia aspera 203
    caudata 203
Dorcopsis luctuosa 87
Doris arbutus 291
Drakea irritabilis 187
Drepanornis D'Albertisii .. 469
Drillia integra 11
    stiza 12
Drimys dipetala 138
Drosera Burmanni 154
    indica 154
    peltata 154
    spathulata 154
Duboisia Hopwoodi.. .. 292
    myoporoides 172, 292
Dysoxylon Muelleri .. 145
    rufum 145
Echinanthus testudinarius .. 290
    tumidus .. 290
Echinarachnius parma .. 290
Echinocardium australe .. 290
Echinocarpus australis .. 143
Echinometra lacunter .. 288
Echinopogon ovatus .. 199
Echinus angulosus 289
    darnleyensis .. 289
    magellanicus .. 289
Eclectus polychlorus ..69, 96
Eclipta alba 163
    platyglossa 163
Ectrosia leporina 200
Edoliisoma hypoleucus .. 71
    milan 315
Edoliosoma melas 99
    plumbea .. 99
    schisticeps .. 99
Egeria arachnoides 439
    Herbstii 439

Page
Egeria longipes 439
Elæocarpus cyaneus .. 143
    grandis.. .. 143
    obovatus .. 143
Elæodendron australe .. 146
Elatine americana 141
Elatostemma reticulatum .. 182
Eleotris ophiocephalus .. 63
Eleusine indica 199
Elops saurus .. 364, 382
Endiandra pubens 178
Engraulis antarcticus 364, 365
    nasutus .. 364, 367
Enhydra paludosa 164
Eopsaltria capito .. 94, 317
    nana .. 94, 317
    placens 94, 98
Eos fuscata 96
Epacris microphylla .. 167
    obtusifolia 167
Epaltes australis 163
Ephestia elutella .. 234, 242
    ficulella .. 234, 242
    interpunctella .. 242
    sericaria .. 235, 242
Epischnia neurophorella 232, 242
Equula edentula 63
Eragrostis Brownii 200
    diandra 200
    leptostachya .. 200
    pilosa 200
Eranthemum lineare .. 173
    variabile .. 173
Erecthites quadridentata .. 165
Erigeron canadensis .. 36
    linifolius .. 36, 162
Eriocaulon nanum 192
    Smithii 192
Eriochilus autumnalis .. 187
Eriochloa annulata 196
    punctata 196
Eriostemon diformis .. 144
    myoporoides .. 144
Erodium cygnorum.. .. 144
Eryngium expansum .. 159
Erythræa australis 170
Erythrina vespertilio .. 151
Etiella Behrii .. 206, 241
    chrysoporella .. 241
    sincerella .. 227, 241
    zinckenella 206
Etrumeus jacksoniensis 364, 382
Eucalyptus Baileyana .. 156
    botryoides .. 156
    corymbosa .. 156

Page
Eucalyptus crebra 156
hæmastoma .. 156
hemiphloia .. 156
maculata .. 156
melanophloia .. 156
microcorys .. 156
pilularis .. 156
planchoniana .. 156
resinifera .. 156
siderophloia .. 156
tereticornis .. 156
tesselaris .. 156
trachyphloia .. 156
Eucarphia cnephæella 227, 241
ensiferella .. 241
neotomella 226, 241
vulgatella 227, 241
Eudynamys cyanocephala .. 96
taitiensis .. 70
Euktiminaria ducalis .. 310
Eulabes Dumontii 99
Eulima Danæ 2
Eupatagus Valenciennesii .. 290
Eupetes ajax 90, 98
nigrocrissus .. 98
Euphorbia alsinæflora .. 179
atoto 179
Drummondii .. 179
eremophila .. 179
Macgillivrayi .. 179
peplus 34
Eupomatia Bennettii .. 139
laurina 139
Euroschinus falcatus .. 148
Eurycles Cunninghamii .. 188
Eurystomus crassirostris ..71, 97
Eusirus dubius .. 331, 349
Eustrephus angustifolius .. 188
latifolius .. 188
Euzophera cosmiella 231, 242
leucarma 230, 242
microdoxa 231, 242
subarcuella 231, 242
Evechinus australiæ .. 289
chloroticus .. 289
Evodia micrococca 144
Evolvulus alsinoides .. 171
Excæcaria agallocha .. 181
Exocœtus mento 64
Exocarpus cuppressiformis .. 183
latifolia 183
Fasciolaria Tenisoni .. 13
Festuca bromoides 200
Fibularia australis 290
volva 290

Page
Ficus aspera 182
Cunninghamii .. 182
macrophylla 182
rubiginosa 182
subglabra 182
Fimbristylis acuminata .. 194
dichotoma .. 194
diphylla .. 194
ferruginea .. 194
microcarya .. 194
monostachya .. 194
nutans 194
polytrichoides .. 194
Flagellaria indica 188
Flemingia parviflora .. 152
Flindersia Bennettiana .. 146
Oxleyana .. 146
Schottiana .. 146
Frenela Endlicheri 183
rhomboidea.. .. 183
robusta 183
Fuirena glomerata 194
Fusus Ino 13
styliformis 12
Gahnia aspera 195
psittacorum 195
Galactia tenuifolia 151
Galeola cassythoides .. 185
Galinsoga parviflora 35, 164
Galium australe 162
Galleria mellonella 242
Gallinula ruficrissa 102
tenebrosa 102
Gambetta pulverulentus .. 102
Gammarus rubro-maculatus .. 267
Gardenia chartacea 160
Gastrodia sesamoides .. 186
Geijera Muélleri 145
salicifolia 145
Geitonoplesium cymosum .. 188
Geodorum pictum 185
Geoffroyius heteroclitus .. 68
Geopelia humeralis 101
placida 101
Geranium dissectum .. 144
Gerres argyreus 62
Gerygone albogularis .. 316
cinerascens 98, 316
inconspicua .. 98
insularis 317
simplex 316
Gleichenia circinata.. .. 202
dicarpa 202
dichotoma .. 202
flabellata.. .. 202

Page
Glenotremites paradoxus 311
Glossodia major 187
  minor 187
Glossogyne tenuifolia .. 164
Glycera tenuicornis.. 256, 278, 322
Glyceria stricta 200
Glycichæra fallax 469
Glycine clandestina.. .. 151
  tabacina 151
Glyciphila subfasciata .. 100
Glyphidodon septemfasciatus 64
Gmelina Leichhardtii .. 174
Gnaphalium collinum .. 164
  japonicum .. 164
  purpureum .. 164
Gomphocarpus fruticosus .. 30
Gompholobium latifolium .. 148
  pinnatum .. 148
  virgatum .. 148
Gonatonotus crassimanus .. 455
  pentagonus .. 455
Gonatorhynchus tumidus .. 437
Goniocidarus geranioides .. 288
  tubaria .. 288
Goodenia bellidifolia .. 165
  grandiflora .. 165
  hederacea.. .. 165
  ovata 165
  panniculata .. 165
  rotundifolia .. 165
  stelligera.. .. 165
Goura D'Albertisi 101
Gracula Krefftii 70
  orientalis 99
Gratiola pedunculata .. 172
  peruviana 172
Graucalus angustifrons .. 99
  Boyeri 89
  Dussumieri .. 71
  hypoleucus .. 71
  lineatus 314
  maforensis .. 314
  melanops .. 99
  pusillus .. 71, 314
  solomonensis . 314
  strenua 99
  tenuirostris .. 315
Grevillea Hilliana 179
  robusta 179
Grewia latifolia 143
Gymnema micradenia .. 170
  pleiadenia .. 170
Gymnocorax senex 99
Gymnostachys anceps .. 191
Hæmanthus tigrinus .. 116

Page
Hæmodorum coccineum .. 187
  tenuifolium .. 187
Hakea saligna 179
Halcyon albicilla 97
  chloris 67
  leucopygia .. 67
  Macleayi 97
  sanctus 67, 97
Haleocharis atropurpurea .. 194
  cylindrostachys .. 194
  fistulosa .. 194
  sphacelata .. 194
Haliaetus leucogaster .. 95
Haliastur girrenera.. .. 95
  sphenurus .. 95
Halimus auritus 435
  lævis 435
  spinosus .. 434, 435
  truncatipes .. 434
  tumidus .. 434, 435
Haliotis iris 390
Halophila ovalis 192
Haloragis alata 154
  ceratophylla ... 154
  heterophylla ... 154
  micrantha ... 154
  tetragona 154
Haplocheira typica... 273, 279
Hardenbergia monophylla ... 151
Harmomia crassipes ... 330
Harpullia Hilli ... 147
Harrovia albo-lineata ... 456
  tuberculata ... 455
Helicea præalta 178
Helicina reticulata 395
Helipterum polyphyllum ... 164
Helix albolabris 398
  brevipila 394
  Buxtoni 394
  carinata 393
  Chapmani 115
  cyclostomata 393
  Delessertiana... 392, 393
  Gurgustii 114
  Krefftii 392
  semicastanea 393
  Spaldingi 393
  spinei 394
  Thompsoni 459
  Torresiana 393
  villaris 392
Helichrysum apiculatum ... 164
  bracteatum ... 164
  diosmifolium ... 164

Page
Helichrysum oxylepis ... 164
Hemarthria compressa ... 197
Hemiaster apicatus... 283, 290
Hemicyclia australasica ... 180
Hemipodius melanotus 92, 101
Henicopernis longicauda ... 95
Henicophaps albifrons 92, 101
Hernandia bivalvis 178
Herodias garzetta 102
Herpestes Monniera ... 172
Heterocentrotus mammillatus 288
Heterocyathus eupsammides ... 294
Heterodontus galeatus 292, 311, 471
  Phillipi 292, 471
Heteromias cinereifrons ... 317
Heteropogon contortus ... 197
Heteropsammia elliptica ... 296
  Michelinii ... 293
Hibbertia acicularis... ... 138
  Billardieri ... 138
  linearis 138
  stricta 138
  vestita 138
  volubilis 138
Hibiscus divaricatus ... 142
  heterophyllus ... 142
  liliaceus 142
  rhodopetalus ... 142
  splendens 142
  trionum 142
Hippocratea obtusifolia ... 146
Hipponoë variegata... ... 289
Hirundo javanica 98
Hodgkinsonia ovatiflora ... 161
Holcus lanatus ... 35, 199
Holopneustes inflatus ... 289
  porosissimus ... 289
  purpurascens ... 289
Homœosoma distichella ... 242
  vagella ... 242
Hormogyne cotinifolia ... 168
Hovea acutifolia 146
  heterophylla... ... 149
  longifolia 149
Hoya australis 170
Huenia bifurcata 437
  proteus 437
Hyastenus diacanthus ... 442
  oryx 442
  Verreauxii ... 442
Hydrilla verticillata ... 184
Hydrocotyle asiatica ... 159
  hirta 159
  laxifolia ... 159

Page
Hydrocotyle tripartita ... 159
  vulgaris ... 159
Hygrophila salicifolia ... 173
Hylochelidon nigricans ... 98
Hymenospermum flavum ... 140
Hypericum gramineum ... 142
Hypoestes floribunda ... 173
Hypolæna laterifolia ... 193
Hypolepis tenuifolia ... 202
Hypoxis hygrometrica ... 188
Ianthænas albogularis ... 101
Ibacus Peronii 280
Icilius australis ... 274, 279, 343
  ellipticus 275
  punctatus ... 343, 350
Idmonea milneana 351
  Pedleyi 351
  radians 350
Imperata arundinacea ... 198
Inachus longipes 439
Indigofera australis... ... 150
  Bayleyi 150
  hirsuta 150
  linifolia 150
  pratensis ... 150
  trifoliata ... 150
Ionidium filiforme 140
  suffruticosum ... 140
Iphigenia indica 189
Iphimedia ambigua... 327, 350
Ipomæa hederacea 171
  palmata 171
  plebeia 171
  purpurea 171
  quamoclit 171
Isachne australis 200
Ischæmum australe... ... 198
  laxum 198
  pectinatum ... 198
  triticeum ... 198
Ixora pavetta 161
Jacksonia scoparia 148
Jasminum didymum ... 168
  lineare 169
  racemosum ... 169
  simplicifolium ... 169
  suavissimum ... 169
Juncus communis 190
  pallidus 190
  pauciflorus 190
  prismatocarpus ... 190
Jussiæa repens 158
  suffruticosa... ... 158
Justicia hygrophiloides ... 172

Page

peploides ... 172
procumbens ... 172
Kennedya rubicunda ... 151
Kentia monostachya ... 191
Keraudrenia Hillii ... 143
Hookeriana ... 143
Kibara macrophylla ... 177
Knoxia corymbosa ... 161
Kraussina Atkinsoni ... 402
Lamarckiana 402, 409
Kreysigia multiflora ... 189
Kyllinga cylindrica ... 193
intermedia ... 193
monocephala ... 193
Laganum Bonami ... 290
depressum ... 290
Lagenophora Billardieri ... 163
solenogyne ... 163
Lalage atrovirens ... 397
humeralis ... 316
leucomela ... 315
leucomelæna ... 315
tricolor ... 316
Lambrus affinis ... 451
calappoides ... 452
harpax ... 450
hoplonotus ... 450
integrifrons ... 452
longimanus ... 449
longispinus ... 452
nodosus ... 451
Sandrockii ... 452
spinifer ... 451
turriger ... 449
validus ... 452
Lampania angulifera ... 388
Cumingii ... 389
Lamprococcyx lucidus ... 96
Meyeri ... 96
minutillus ... 96
Lanius karu ... 315
Lantana camara ... 29, 174
selloviana ... 174
Laportea gigas ... 182
photinophylla ... 182
Lappago racemosa ... 197
Lasiocera canilinea ... 241
Lavatera plebeia ... 142
Laxmannia gracilis ... 189
Leda lucida ... 3
Leersia hexandra ... 198
Leiostraca acutispira ... 3
Lemna minor ... 191
oligorrhiza ... 191

Page

Lepidium ruderale ... 140
Lepidosperma concavum ... 195
exaltatum ... 195
laterale ... 195
Lepironia mucronata ... 194
Lespediza cuneata ... 151
Leptochloa chinensis ... 199
Leptomeria acida ... 183
Leptomithrax australiensis ... 440
spinulosus ... 441
Leptopus longipes ... 439
Leptospermum flavescens ... 155
myrtifolium ... 155
scoparium ... 155
stellatum ... 155
Lepyrodia interrupta ... 192
Leucopogon ericoides ... 166
juniperinum ... 167
lanceolatus ... 166
leptospermoides ... 166
margarodes ... 166
melaleucoides ... 166
neoanglicus ... 167
Richei ... 166
Leucosia Chevertii ... 47
Leslii ... 48
moresbiensis ... 49
neocaledonica ... 46
ocellata ... 45
orbicularis ... 44
Perryi ... 46
pulcherrima 46, 403
reticulata ... 45
splendida ... 47
unidentata ... 44
Whitei ... 45
Leucothoë commensalis 261, 279
diemenensis 262, 278
gracilis ... 263, 279
novæ-hollandiæ 329, 349
Lindsæa dimorpha ... 202
ensifolia ... 202
Fraseri ... 202
incisa ... 202
linearis ... 202
microphylla ... 202
Lingula anatina ... 390
exusta ... 402
hians ... 390, 402
Murphiana ... 402
tumidula ... 402
Linnanthemum crenatum ... 170
geminatum ... 170
indicum ... 170

Page
Linthia australis 290
Linum marginale 143
Lipocarpha argentea 35, 194
    microcephala ... 194
Lippia nodiflora 174
Lita solanella 112
Lithadia sculpta 57
Lithodermis cuneus... ... 299
Lithrum salicaria 157
Litsæa dealbata 178
Livistona australis 191
Lobivanellus miles 101
Lobopsammia Michelinii 295, 301
Logania pusilla 170
Lolium temulentum 35, 201
Lomaria capensis 203
Lomatia silaifolia 179
Lonchocarpus Blackii ... 152
Lopholaimus antarcticus ... 318
Loranthus alyxifolius ... 160
    celastroides .. 160
    dityophlebus ... 160
    exocarpi ... 160
    linophyllus ... 160
    longiflorus ... 160
    pendulus ... 160
    quandang ... 160
Lorius cardinalis 68
    chlorocercus 68
    hypænochrous ... 99
Lotus australis 150
Lovenia elongata 290
Luzula campestris 190
Lycium australe 172
Lycopodium carolinianum ... 201
    laterale ... 201
Lygodium scandens... ... 201
Lyonsia lilacine 169
    reticulata 169
Lysianassa affinis 256
    australasiensis ... 323
    nitens ... 255, 278, 323
Lysinema pungens 167
Maba fasciculosa 168
    geminata 168
Macadamia ternifolia .. 178
Macaranga tanarius .. 181
Machærhamphus alcinus .. 95
Machærirhynchus flaviventer 90, 97
Macropus crassipes 87
    longipes 439
Macropygia Mackinlayi .. 315
    nigrirostris .. 314
    rufa 314

Page
Macropygia rufocastanea .. 314
Macrosilia cluentius .. 398
Mactra striata 389
Macrozamia Miguelii .. 184
    Paulo-gulielmi .. 184
Madreporaria perforata .. 293
Magas Cumingi 399
Magasella Cumingi .. 400, 402, 409
Malaisia tortuosa 182
Mallotus claoxyloides .. 181
    discolor 181
    philippinensis .. 181
Malurus alboscapulatus .. 98
    Brownii 317
    cruentatus 317
    Gouldii 317
    Lambertii 318
    longicaudatus .. 317
    longicaudus .. 317
    melanocephalus .. 317
Malva rotundifolia .. 33, 142
    verticillata 142
Malvastrum spicatum .. 142
    tricuspidatum .. 142
Manucodia atra 97
    Comrii 469
    Gouldii 94
    Keraudreni ..94, 97
Maretia planulata 290
Marlea vitiensis 160
Marrubium vulgare 34
Marsdenia coronata 170
    Fraseri 170
    rostrata 170
Marsilea hirsuta 201
Medicago denticulata 32, 150
Medicosma Cunninghamii .. 145
Megalops cyprinoides 365, 383
Megamœra Bœckii .. 336, 350
    diemenensis 266, 279
    Mastersii 265, 279
    subcarinata 335, 349
    suensis .. 335, 349
Megapodius Brenchleyi .. 75
    Duperreyi .. 101
    fuscirostris .. 101
Megerlia pulchella .. 401, 409
    sanguinea .. 401, 409
    Willemoesi .. 402
Melaleuca ericifolia 156
    genistifolia .. 156
    hypericifolia .. 156
    leucadendron .. 156
    linariifolia .. 156
    nodosa 156

Page

Melaleuca thymifolia .. 156
Melania daktulios 24
 scalariformis .. 25
 Wilkinsonii .. 25
Melanocharis unicolor .. 98
Melanodryas cucullata .. 316
Melastoma malabathricum .. 157
Melia composita 145
Melichrus rotatus 166
 urceolatus .. 166
Melicope erythrococca .. 144
 neurococca .. 144
Melidora macrorhyncha .. 97
Meliotus parviflora .. 32, 150
Melita australis .. 264, 278
 Ramsayi .. 264, 279
Melithreptus albogularis .. 100
Melodinus acutiflorus .. 169
Melodorum Leichhardtii .. 139
Melothria Cunninghamii .. 158
Mensæthius monoceros .. 437
 subserratus .. 437
Mentha satureioides .. 174
Merops ornatus 97
Mesomelæna deusta.. .. 195
Mesoneurum brachycarpum .. 152
Mespilia globulus 289
Mesoprion aureovittatus .. 61
Metalia maculosa 290
 sternalis 290
Micippa curtispina 446
 inermis 445
 parvirostris .. 445
 spatulifrons .. 445
 superciliosa .. 446
Micippoides angustifrons .. 444
 longimanus .. 444
Micrœca albofrontata ..90, 98
 flavigaster.. .. 98
 flovovirescens .. 98
Microcyphus maculatus .. 289
 zigzag .. 289
Microdeuteropus anomalus .. 341
 australis 271, 279, 341
 chelifer 340, 350
 gryllotalpa .. 341
 Mortoni 339, 350
 tenuipes 339, 341, 350
 Websteri .. 341
Microglossus aterrimus ..91, 96
Microhalimus deflexifrons .. 435
Microlæna stipoides.. .. 198
Micromelum pubescens .. 145
Micropiza crassipes.. .. 439
Microtis parviflora 186

Page

Microtis porrifolia 186
Millettia megasperma .. 150
Milvus affinis 95
Mithrax aspera 447
 spinifrons 447
Mitra alokiza 9
 coarctata 8
 daphnelloides.. .. 7
 dictua 8
 exasperata 429
 othone 8
 pacifica 429
Mitrasacme alsinoides .. 170
 indica 170
 paludosa .. 170
 pygmæa .. 170
Mœra approximans.. 334, 349
 dentifera .. 332, 349
 hamigera .. 333, 349
 quadrimanus.. .. 334
 Ramsayi 334
 rubro-maculata 267, 279
 spinosa .. 268, 279
 truncatipes 334
 viridis .. 333, 349
Mollinedia Huegeliana .. 177
Mollugo spergula 159
Momordica balsamina .. 158
Monarcha aruensis 98
 Brodiei 80
 canescens 319
 carinata .. 97, 319
 castaneiventris .. 313
 guttulatus .. 98
 melanopsis .. 319
 melanoptera .. 98
 rufocastanea 79, 313
Monococcus echinophorus .. 175
Monotaxis macrophylla .. 180
Monotoca elliptica 167
 scoparia 167
Montagua longicornis 323, 350
 Miersii .. 323, 350
Morinda acutifolia 161
 jasminoides .. 161
Mucuna gigantea 151
Mugil argenteus 417
 breviceps 424
 cephalotus 416
 compressus 421
 crenidens 424
 delicatus 422
 dobula 414
 gelatinosus 424
 grandis 412

Page
Mugil occidentalis 418
Peronii 421
Pettardi 422
ventricosus 423
waigiensis .. 418, 420
Muhlenbeckia gracillima .. 177
Mukia scabra 158
Mulloides vanicolensis .. 62
Munia caniceps 100
Muscicapa erythrogaster .. 316
Mycteria australis 102
Myelois œnobarella.. 228, 241
Myiagra castaneiventris .. 313
ferro-cyanea .. 78
nitida 318
pallida 79
plumbea .. 89, 98, 318
rubecula 318
vanikorensis .. 314
Myoporum acuminatum .. 173
debile 173
Myra affinis .. 50, 403
australis .. 50, 404
carinata 50

Page
Nephelium foveolatum .. 147
leiocarpum .. 147
tomentosum .. 147
Nephopteryx euraphella 217, 241
fornacella 219, 241
infusella 218, 241
opimella 218, 241
stenopterella 218, 241
Neptunia gracilis 153
Neptunus pelagicus.. .. 398
Nicandra physalodes .. 172
Ninox albomaculata .. 96
dimorpha 96
punctulata 66
terricolor 466
undulata 89, 96
Nicotiana suaveolens .. 172
Niso psila 18
Notelæa longiflora 169
ovata 169
Notholæna distans 204
Notopterus Macdonaldi .. 398
Notothixos cornifolius .. 160
incanus 160

Page

- Oplismenus compositus .. 197
  - setarius .. 197
- Opuntia vulgaris 31
- Orchestia dispar 250
  - Macleayana 250, 277
- Oreophorus nodosus ... 404
- Oriolus affinis 94
  - striatus 94, 99
- Otidiphaps cervicalis ... 470
  - nobilis 470
- Ottelia ovaliflora 184
- Ovulum gigas 387
- Oxalis corniculata 144
- Oxylobium aciculiferum ... 148
  - scandens ... 148
  - trilobatum ... 148
- Pachycephala brunnea ... 99
  - collaris 99
  - fuliginata ... 99
  - orioloides ... 70
- Pachymetopon squamosum ... 62
- Pæcilodryas cerviniventris ... 317
  - superciliosa ... 317
- Panax elegans 159
- Pandanus pedunculatus ... 191
- Pandion leucocephalus ... 95
- Panicum Baleyi 196
  - bicolor 197
  - crus-galli 196
  - decompositum ... 197
  - effusum 197
  - flavidum 196
  - foliosum 196
  - gracile 196
  - indicum 196
  - lachnophyllum ... 197
  - leucophæum ... 196
  - marginatum ... 196
  - maximum... 35, 196
  - melananthum ... 197
  - Mitchellii 197
  - parviflorum ... 196
  - pygmæum... ... 196
  - sanguinale... ... 196
  - semialatum ... 196
  - tenuissimum ... 196
  - trachyrachis ... 197
- Papaver horridum 139
- Paphia striata 389
- Pappophorum nigricans ... 199
- Paradisea Raggiana... ... 97
- Paradolepas Neptuni ... 398
- Paramicippa affinis 447
  - spinosa ... 447

Page

- Paramithrax barbicornis ... 440
  - Gaimardii ... 440
  - Peronii ... 440
  - sternocostulatus 440
- Parathoë rotundata... ... 447
- Parietaria debilis 182
- Parra novæ-guineæ... ... 102
- Parsonsia ventricosa ... 169
- Parthenope calappoides ... 452
  - Sandrockii ... 452
  - tarpeius... ... 453
- Paspalum brevifolium ... 196
  - distichum ... 196
  - scrobiculatum ... 196
- Passiflora Banksii 158
  - edulis 29
  - Herbertiana ... 158
- Patella cinnamomea 389
- Patersonia glabrata... ... 187
  - sericea 187
- Pavonia hastata 142
- Peltops Blainvillei 97
- Pelicanus conspicillatus ... 102
- Pempelia apotomella 224, 241
  - caliginosella 221, 241
  - diagramella 223, 241
  - melanostyla 220, 241
  - oculiferella 222, 241
  - rufitinctella 224, 241
  - strigiferella 221, 241
- Penæus canaliculatus ... 38
  - esculentus 38
  - granulosus 41
  - Macleayi 40
  - Mastersi 42
  - monoceros 38
  - novæ-guineæ ... 43
  - palmensis 43
  - semisulcatus ... 38
- Pennisetum compressum ... 197
- Peperomia leptostachya ... 183
- Perameles moresbiensis ... 88
- Pericampylus incanus ... 139
- Peronella decagonalis ... 290
  - orbicularis ... 290
  - Peronii 290
- Perotis rara 197
- Persephona tuberculosa ... 60
- Persoonia cornifolia... ... 178
  - linearis 178
  - media 178
  - Mitchellii ... 178
  - tenuifolia ... 178
  - virgata 178

Page
Petalostigma quadrioculare ... 180
Petrœca bicolor 316
  cucullata 316
  Goodenovii ... 316
  Leggii 316
  Ramsayi 316
Petroica erythrogastra ... 316
  multicolor... ... 316
Petrophila sessilis 178
Peutamerus oblongus ... 405
Phæton flavirostris 84
Phaius grandifolius... ... 185
Phalacrocorax Bougainvillei ... 358
  carunculatus ... 358
  cirrhatus ... 358
  magellanicus ... 357
  novæ-hollandiæ 102
  nycthemerus ... 357
  purpurascens ... 357
  sarmientosus ... 357
  verrucosus ... 358
Phaseolus psoraleoides ... 152
Pherusa lævis ... 260, 278
Philemon novæ-guineæ ... 100
Philydrum lanuginosum ... 189
Philyra lævis 53
  porcellana 53
Phlyxia crassipes 53
  erosa 54
  granulosa 54
  lambriformis 53, 404
  orbicularis 54
  quadrata 53
  Ramsayi 55
Phoxus Batei ... 259, 278
  villosus ... 258, 278
Phragmitis communis ... 200
Phyllacanthus annulifera ... 288
  dubia 287, 288
  imperialis 287, 288
  parvispina 286, 288, 291
Phyllanthus albiflorus ... 180
  Ferdinandi ... 180
  hirtellus ... 180
  microcladus ... 180
  minutiflorus ... 180
  similis 180
  subcrenulatus ... 180
  thesioides ... 180
Phyllosoma Duperreyi ... 282
Phyllota phylicoides ... 149
Physalis peruviana ... 35, 172
Picris hieracroides 165
Piezorhynchus albiventris ... 318

Page
Piezorhynchus alecto ... 97
  Gouldii ... 318
  leucotis ... 319
  melanocephalus 468
  trivirgata ... 318
  vidua ... 468
Pimelia altior 179
  linifolia 179
  pauciflora 179
Piper novæ-hollandiæ ... 183
Pipturus argenteus 182
Pisa diacantha 442
  monoceros 437
Pisonia aculeata 177
Pithecolobium pruinosum ... 153
Pitta Macklotii 98
  novæ-guineæ 98
  strepitans 318
Pittosporum rhombifolium ... 140
  revolutum ... 140
  undulatum ... 140
Plantago debilis 175
  lanceolata... 29, 175
  major 28
  varia 175
Platycerium alcicorne ... 204
  grande ... 204
Plectorhyncha stictocephalus... 100
Plectranthus parviflorus ... 174
Plectronia coprosmoides ... 161
  latifolium ... 161
  lucidum 161
  vacciniifolium ... 161
Pleogyne australis 139
Pleurotoma Claræ 11
  consutilis ... 9
  rhomboidalis ... 10
Plocamophorus imperialis ... 292
Plotus novæ-hollandiæ ... 102
Plumbago zeylanica... ... 167
Poa annua 29, 35, 200
  cæspitosa 200
Podargus marmoratus ... 97
  papuensis... ... 97
Podiceps novæ-hollandiæ ... 102
Podocarpus elata 183
Podocerus australis ... 388, 350
Polanisia viscosa 140
Pollia crispata 190
  macrophylla 190
Pollinia fulva 198
Polyalthia nitidissima ... 138
Polycarpon tetraphyllum ... 141
Polycheria brevicornis ... 346

Page

- Polycheria tenuipes 345, 350
- Polygala japonica 141
- Polygonum attenuatum ... 177
  - avicularе 36, 177
  - lanigerum ... 177
  - lapathifolium ... 177
  - minus 177
  - orientale ... 177
  - plebeium ... 177
  - strigosum ... 177
  - subsessile ... 177
- Polynemus plebejus ... 63
- Polypodium confluens ... 204
  - irioides ... 204
  - proliferum ... 204
  - punctatum ... 204
  - rigidulum ... 204
  - scandens ... 204
  - serpens ... 204
  - tenellum ... 204
- Pomarea castaneiventris ... 313
- Pomatogeton crispus ... 192
  - natans ... 192
  - obtusifolius ... 192
  - perfoliatus ... 192
  - tenuicaulis ... 192
- Pomatostomus Isidori ... 99
- Pomax umbellata 161
- Poranthera microphylla ... 179
- Porphyrio melanopterus ... 102
- Portulaca oleracea 141
- Porzana quadristrigata 92, 102
- Pothos Loureiri 191
- Prasophyllum brevilabre ... 186
  - fuscum ... 186
  - nigricans ... 186
  - rufum ... 186
- Pratia erecta 166
- Pristiophorus cirratus ... 459
- Protella australis ... 276, 279
- Proto novæ-hollandiæ 275, 279
- Psammoseris cylicioides 297, 299
- Psettus argenteus 63
- Pseudogerygone chloronota ... 316
  - culicivora ... 316
  - fusca ... 316
  - lævigaster ... 316
  - magnirostris ... 316
  - Mastersii ... 316
  - personata .. 316
- Pseudomorus brunoniana ... 182
- Pseudorectes ferrugineus ... 99
- Psilotum triquetrum ... 201
- Psoralea tenax 150

Page

- Psycotria daphnoides ... 161
  - loniceroides ... 161
- Pteris aquilina 203
  - falcata 203
  - geraniifolia 203
  - incisa 203
  - longifolia 203
  - paradoxa 203
  - tremula 203
  - umbrosa 203
- Pterocauton sphacelatus ... 163
  - spicatus ... 163
- Pteropus conspicillatus ... 85
- Pterostylis longifolia ... 186
  - mutica 186
  - ophioglossa ... 186
  - parviflora ... 186
  - rufa 186
- Ptilopus aurantiifrons ... 100
  - coronulatus ... 100
  - Gestroi 100
  - iozonus 100
  - nana 470
  - perlatus 100
  - poliura 100
  - pulchellus... ... 100
  - Rivolii ... 94, 100
  - superbus ... 73, 100
  - viridis 73
- Ptilorhis magnificus... ... 97
- Ptilotis analoga 100
  - germana 100
  - versicolor 100
- Ptychosperma Cunninghamii... 191
- Pultenæa echinula 149
  - euchila 149
  - microphylla ... 149
  - myrtoides ... 149
  - petiolaris... ... 149
  - retusa 149
  - ternata 149
  - villosa 149
- Pustulopora intricaria ... 352
  - parasitica ... 352
  - proboscidea ... 352
- Rallina tricolor 102
- Rannunculus lappaceus ... 138
  - parviflorus ... 138
  - rivularis ... 138
- Ratonia anodonta 147
  - distylis 147
  - pyriformis 147
  - tenax 147
- Rectes brunneiceps 467

Page
Rectes decipiens ... 91, 99
Reinwardtæna Reinwardtii ... 101
Restio complanatus... ... 193
  dimorphus 193
  gracilis 193
  tetraphyllus 193
Retepora radians 350
Rhagodia hastata 175
  nutans 175
Rhipidura albiscapa ... 318
  castaneothorax ... 98
  diemenensis ... 318
  maculipectus ... 318
  melanoleuca ... 318
  motacilloides ... 318
  picata 318
  rubrofrontata ... 82
  saturata 318
  setosa 98
  Sharpei 318
  tricolor 318
Rhipogonon album 188
  Elseyanum ... 188
Rhitidoceros plicatus ... 97

Page
Samolus Valerandi 167
Sarchochilus divitiflorus ... 185
  Hillii 185
  olivaceus ... 185
Sarcopetalum Harveyanum ... 139
Sarcostemma australe ... 169
Sauloprocta Cockerellii ... 81
  tricolor... 82, 95, 98
Saussurea carthamoides ... 162
Scævola hispida 165
Schedonorus littoralis ... 200
Schizæa bifida 201
  dichotoma 201
Schizophrys aspera 447
Schzorrhina dorsalis ... 408
Schœnobius imparellus ... 239
Schœniclus albescens ... 92
  australis ... 92
Schœnus brevifolius ... 195
  Brownii 195
  calostachyus ... 195
  melanostachyus ... 195
  nitens 195
  scabripes 195

Page
Siphonodon australe ... 140
Sipunculus heterocyathi ... 306
Sisyrinchium micranthum 35, 187
Sium latifolium 34
Smilax australis 188
  glycyphylla... ... 188
Solanum aviculare 171
  densevestitum ... 172
  discolor 171
  furfuraceum ... 171
  nigrum 171
  pseudo-capsicum ... 171
  sodomæum 31, 172
  stelligerum ... 171
  verbascifolium ... 171
Solidula coccinata 429
Soliva anthemifolia 164
Sonchus oleraceus 165
Sophora Fraseri 152
Sowerbæa juncea 189
Sorghum halepense... 34, 198
  plumosum... ... 198
Sparangium angustifolium ... 191
Spartothamnus junceus ... 174
Spermacoce brachystema ... 161
  multicaulis ... 161
Spermatophthora mesactella 225, 241
Sphærechinus australiæ ... 288
Sphecotheres flaviventris ...94, 99
  Salvadorii ... 94
Spilanthes grandiflora ... 164
Spiranthes australis... ... 186
Sporobolus diander... ... 200
  indicus 200
  virginicus ... 200
Spratelloides delicatulus 364, 381
Sprengelia ponceletia ... 167
Squatarola helvetica ... 101
Stachys arvensis 175
Stackhousia spathulata ... 146
Statice australis 167
Stegocephalus ampulla ... 253
  latus... 252, 278
Stellaria media ... 35, 141
Stenocarpus salignus ... 179
  sinuatus ... 179
Stenorhynchus brevirostris ... 432
  curvirostris ... 432
  fissifrons ... 432
Stentotaphrum americanum ... 197
Stephania hernandiæfolia ... 139
Stephanocidaris bispinosa ... 288
Sterculia discolor 143
  diversifolia ... 143

Page
Sterculia quadrifida... ... 142
Sterna anglica 102
  anosthæta 102
  Bergeri 102
  gracilis 84
  melanauchen ... 102
Stigmatops alboauricularis ... 100
Stipa aristiglumis 199
  micrantha 199
Stomopneustes variolaris ... 288
Strix delicatulus 95
  tenebricosus 88, 96
Strongylocentrotus armiger ... 288
  erythrogrammus 288
  tuberculatus ... 288
Sturnoides fulvipennis ... 76
Stylidium capillare 165
  debile 165
  graminifolium ... 165
Styphelia viridis 166
Suæda maritima 176
Sula cyanops 102
  fiber 94, 102
  fusca 84
Swainsonia Fraseri 150
  galegifolia ... 150
  procumbens ... 150
Sylvia dorsalis 317
Syma torotoro 97
Symmorphus leucopygius 315, 397
  nævius 315, 397
Symplocos spicata 168
Syncarpia leptopetala ... 156
Synoicus cervinus 101
Synoum glandulosum ... 145
Tabernæmontana angustifolia 169
  orientalis ... 169
Tachypetes aquila 102
Tadorna radjah 102
Tæniophyllum Muélleri ... 185
Tagetis glandulifera 35, 164
Talitrus sylvaticus ... 246, 277
Talorchestia diemenensis 248, 277
  quadrimana 248, 277
Tanysiptera galatea... ... 96
  nympha ... 467
  Salvadoriana ...94, 97
  sylvia 94
Tarrietia actinophylla ... 143
  argyrodendron ... 143
  trifoliata 143
Tecoma australis 173
  jasminoides ... 173
Tellina robusta 430

Page
Tellina striatula 430
Temnopleurus toruematicus ... 289
Tephrosa filipes 150
purpurea 150
Terebra Brazieri 24
venilia 23, 24
Terebratulina cancellata 401, 499
Wyvillei .. 401
Tetragonia expansa... ... 158
Tetratheca thymifolia ... 141
Thalotia marginata 109
Thelymitra ixioides... ... 186
Therapon servus 62
Thesium australe 183
Thunbergia alata 173
Thysanotus tuberosus ... 189
Tiarinia cornigera 449
mammillata ... 448
sp. ? 448
Tigrisoma heliosyla... ... 102
Tillæa verticillaris 154
Timonius Rumphii 161
Todea barbara 202
Todopsis cyanocephala .. 98
Todus rubecula 318
Tornatellina coccinata ... 429
Trachymene incisa 159
procumbens ... 159
Tragia novæ-hollandiæ ... 181
Trema aspera 181
Tribulus terrestris 144
Trichoglossus Massenæ ...94, 96
novæ-hollandiæ... 95
subplacens ...91, 96
Trichomanes parvulum ... 202
vitiense ... 202
Tricoryne elatior 189
Tricostularia paludosa ... 195
Trifolium repens 150
Triforis planata 6
Wilkinsoni... ... 6
Triglochin Maundii... ... 122
procera 192
striata 192
tuberosum ... 192
Trigonia Lamarckii... 390, 392
pectinata 390
Tringa albescens 101
australis 101
crassirostris 101
Triopa Yatesi 292
Tristanea conferta 156
laurina 156
suaveolens ... 156

Page
Triton Woodsii 15
Tritonium Quoyi 390
Trivia minima 4
Trochocarpa laurina ... 166
Trophon polyphyllia ... 7
succinctus... ... 16
Tubulipora flabellaris ... 353
Turbinaria crater ... 116, 244
Turbo foliaceus 429
laminiferus 429
squamosus 429
Turræa pubescens 145
Tylophora floribunda .. 170
Typhis arcuatus 428
japonica 428
Uraria lagopoides 151
Urena lobata 142
Urothoë pinguis ... 325, 349
Urtica incisa 182
urens 34
Utricularia cyanea 173
exoleta 173
flexuosa... ... 173
pygmæa... ... 173
Vallisneria spiralis 184
Vandellia alsinoides ... 172
Velleia spathulata 165
Veluspa polymorpha ... 345
Venus marica 430
Verbena bonariensis... 30, 174
officinalis 174
venosa ... 30, 174
Vernonia cinerea 162
Veronica plebeia 172
Vicia hirsuta ... 32, 151
sativa ... 32, 151
Vigna lutea 152
vexillata 152
Villarsia reniformis... ... 170
Vinca rosea 30
Vincetoxicum carnosum ... 170
ovatum ... 170
Viola betoniacæfolia ... 140
hederacea 140
Viscum angulatum 160
articulatum... ... 160
Vitex lignum-vitæ 174
trifolia 174
Vitis antarctica 146
Vittadinia australis... ... 162
scabra 162
Voluta Angasi 463
fusiformis 390
Kingi 463

Page
Wahlenbergia gracilis ... 166
Waldheimia australis ... 402
Wedelia biflora 163
 calendulacea ... 163
 spilanthoides ... 163
Westringia eremicola ... 175
Wikstræmia indica 179
Wyvillea longimanus 337, 350
Xanthium spinosum 35, 163
Xanthorhæa arborea ... 190
 macronema ... 190
Xanthotis filigera 100
Xenocarcinus depressus ... 437
 tuberculatus ... 436
Xenocheira fasciata... 272, 279

Page
Xerotes elongata 190
 filiformis 190
 longifolia 190
 multiflora 190
Xylomelum salicinum ... 178
Xyris complanata 190
 gracilis 190
Zanthoxylon brachyacanthum 145
Zebrida longispina 454
Ziera granulata 144
 lævigata 144
 Smithii 144
Zornia diphylla 151
Zosterops longirostris 94, 100
 luteus 94
Zoysia pungens 197

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PROCEEDINGS

OF THE

LINNEAN SOCIETY

OF NEW SOUTH WALES.

WEDNESDAY, JANUARY 29TH, 1879.

The President, Rev. J. E. Tenison-Woods, F.G.S., F.L.S., etc., in the Chair.

The President introduced to the Meeting the following gentlemen as Visitors:—The Hon. Louis Hope, W. H. Archer Esq., W. A. Haswell, Esq., M.A., B.Sc., and Dr. O'Connor, of H.M.S. "Sapphire."

DONATION.

Compte Rendu de la Societe Entomologique de Belgique, Serie II., No. 56.

PAPERS READ.

ON SOME TERTIARY FOSSILS.

BY THE REV. J. E. TENISON-WOODS, F.G.S., F.L.S., PRESIDENT LINNEAN SOCIETY, N.S.W., &c., &c.

At a recent meeting of this Society I described some fossils from the tertiary (probably Miocene) beds of Muddy Creek, Western Victoria. I now complete the list of all those at present in my hands. They came from the same locality, and were obtained for me by the late Mr. Samuel Pratt Winter, who I regret to add died at the close of last year. I take this opportunity of expressing what a loss science has sustained in the death of so estimable a man. Not only was his house hospitably open to all who desired to advance the knowledge of the geology of the district, but during the last 20 years he constantly gave me the most untiring and valuable assistance in all my studies. It is an additional source of regret to me that he was not able to receive from me the feeble, but sincere acknowledgment of his assistance which I have given in the preceding paper.

The fossils here described have no special character which calls for notice. The resemblances to Miocene forms of Europe are fewer. A *Leiostraca* and a *Crossea* connect them with our existing fauna, but the general character differs much from anything we have with us now. It has been thought that our fossil fauna is somewhat like the facies of that living in Philippine Seas; but this is not the case. The fauna of North Eastern Australia has a

LEIOSTRACA ACUTISPIRA. Pl. 1, fig. 2.

Testa parva, subulata, medio parum ventricosa, polita, tenui; anfr. 11, *haud latis, ommino læribus, sutura vix visibili; apertura pyriformi, labro antice producto; labio parvo, angusto, rotundato.* Long. 8½, lat. 2.

Shell small, subulate, slightly ventricose in the middle, polished, thin; whorls 11, not wide, altogether smooth, suture scarcely visible, aperture pyriform, labrum produced anteriorly, lip small, narrow, rounded.

The differences between this shell and *L australis*, our only Australian species, are, first that the fossil is smaller, opaque, much more acute in the spire, with many more whorls in proportion; there is a peculiarity in *L. australis* from which this fossil completely differs, the top of the spire is obtusely rounded and on the summit the nucleus is placed like a little granule.

CONUS PULLULASCENS. Pl.1, fig. 3-4.

The two cones figured on this plate I only name provisionally. They are the same species, but fig 4 is very much worn. The specimens seen by me are all extremely small with a very large conspicuous pullus, the upper angle of the whorls is distinctly and elegantly ribbed, and the whole shell is deeply and distantly spirally grooved. Larger and more numerous specimens may enable me to give better details, and more information as to the relations of the species.

LEDA LUCIDA. Pl. 1, fig. 5 and 5 a.

Testa parva, tumida, solida, polita, æquilaterali quasi, ovata, concentrice regulariter costata, costis rotundatis, æqualibus; latere postico vix producto, subacute angulato, area postangulari vix sulcata; latere antico brevi, obtuse rotundato, umbonibus subacutis. Long. 3½, lat. 5½, alt. 2.

Shell small, tumid, solid, polished, equilateral, almost ovate, regularly concentrically ribbed, ribs rounded equal, posterior side scarcely produced subacutely angular, posterior angle scarcely sulcate, anterior side short, obtusely rounded, umbone subacute.

This fossil differs from those previously described, in its short posterior side and the absence of any groove within the angle. It is also of tumid shape and the ribs are regular.

Crossea parvula. Pl. 1, fig. 7,

Testa minuta, oblique discoidea, late profundeque umbilicata, solida, nitente; anfr. 3½, rotundatis, regulariter, concinne, spiraliter striatis, apice prominulo; apertura exacte orbiculata, labro crassa, postice producto, cum margine umbilici conjuncto, labio immerso, antice incrassato, producto, angulato, umbilico, concavo.

A minute *Natica*-like shell, with a wide umbilicus and the columella produced into a thickened anterior angle, the labrum is also produced very much posteriorly, so as to be continuous with a solid margin, which surrounds the umbilicus; the aperture is perfectly round and solid, which is the character of the whole shell. There are also signs of fine punctate dots in the grooves, which neatly ornament the lower whorls, like *C. concinna* Angas of Port Jackson. *Crossea* may be said to be a characteristic Australian genus. The peculiar angular extension of the columella easily serves to distinguish it. This is the first instance of its being found fossil. It comes very close to the existing species, but is very much smaller.

Trivia minima. Pl. 1, fig. 8, 8a.

Testa parva, late ovata, globosa, nitente, spira omnino occlusa; costis distantibus, medio sulco conspicuo separatis, aliquando bifurcatis, aliquando costis brevioribus intercalantibus; apertura angusta, utrimque curvata, labio angulato; labro incrassato, lato, subvaricoso. Long. 6, lat. 5½, alt., 3½.

Shell small, broadly ovate globose or ventricose, spire quite concealed; ribs distant, well raised and conspicuous, separated on the back by a conspicuous groove, some bifurcating and some shorter ribs sometimes intercalated in the interstices; aperture narrow, curved at each end; lip angular, the ends of the ribs forming the teeth, which are somewhat close; the labrum is broad, thickened, and almost varicose, the teeth being rather distant.

This fossil is in its general form extremely like *T. avellanoides*, McCoy, but it is so very small and stouter in proportion to its size. It not a young shell, for not only is it always found of the same size, but the young of this genus present an entirely different aspect, The costa are much stronger in proportion to the size, they are fewer, the vacant dorsal space is not nearly so clearly defined, the labrum is thick, with fewer teeth, and it does not overlap as in *T. avellanoides*.

CERITHIUM EUSMILIA. Pl. 1, fig. 9.

Testa parva, anguste pyramidata, turrita, nitente ; anfr. 8, ? *(decoll.) infra carinatis,* 11 - 14 *costis concinnis, infra sulcatis, insignitis; costis angustis, rotundatis, exacte definitis ; interstitiis striatis, peripheria angulata, sutura funiculo insignita ; apertura rotundata, labro tenui, canali brevissimo, basi planata, radiatim crebre, conspicue, striata.*

This small *Cerithium* was never found in a perfect state. It is a *Turbonilla*, but for the mouth. The distant raised ribs render it easy of recognition, for they are not divided into granules, and at the lower part of each one there is a distinct angular notch, which extends into the interstices. The periphery is angular, base flat and radiately striate, the suture with a narrow spiral thread, and the canal very short and recurved.

CERITHIUM SALTERIANA. Pl. 1, fig. 11.

Testa minuta, tumide turrita, apice inflato ; anfr. 11, *planatis, oblique crebre costatis, costis regulariter granosis ; granis superne majoribus; apertura quadrata, canali spiraliter curvato, columella uniplicata, labro tenui, nucleo trochiformi,* 2½ *anfr. tumido, costato.* Alt. 4½, lat. vix 1, mill.

This peculiar fossil is mainly distinguished from the very numerous members of this genus, (containing many hundred species, recent and fossil), by its small size, tumid apex and spiral canal. The ornamentation of the flat whorl, is confined to numerous small close sloping ribs, which are divided into many granules. The divisions between which correspond so as to give rise to spiral grooves. The upper granules on each rib are rather larger than the rest, giving the suture a somewhat coronate appearance.

TRIFORIS WILKINSONI. var. PSILA. Pl. 1, fig. 10.

Testa fere minuta, turritissima, solidiuscula nitente, apice acuto; anfr. 17, *convexis, conspicue* 4 *carinatis, crebre costatis, carinis supra cost. transeuntibus et ibi nodosis, costis in* 3 *ultimis anfr. antice evanidis ita ut* 3 *carinis sint læribus, sutura late caniculata et funiculo minuto insignito, basi lirata, canali brevi, obliquo, apertura ovata.* Long. 8½, lat. 2.

This small fossil, which is almost minute in size, is very

Triforis sulcata is a very much larger shell and with two grooves only in the middle of the whorls.

TROPHON POLYPHYLLIA. Pl. 2, fig. 1.

Testa parva, fere minuta, ovata ; anfr. 6, *convexis, medio angulatis, undique (nucleo* 2½ *anf. excluso) lamellose costatis; lamellis, valde undulosis, superne spiniferis, spinis curvatis, concavis, peripheria angulata ; apertura orbiculata, polita, labro incrassato, intus tuberculato, canali prælongo, conspicue recurvo; nucleo polito, lævi, fere verticaliter sito.* Long. 5½ lat. 2½.

This is a very interesting little fossil, very distinct in every way from any now existing on the Australian coast. It is very small, and the whorls which are angular in the middle are closely covered with delicate undulating frills. Some of the undulations are prolonged into concave spines on the lower whorls and the upper part of the penultimate one. The aperture is orbicular, enamelled and the inner lip is tubercular ; the canal is long, not quite open and much curved ; the nucleus is almost unrolled, erect and highly polished.

Plate 2, fig. 2, represents a common form of the young of *Nassa Tatei*, nobis.

MITRA DAPHNELLOIDES. Pl. 2, fig. 3.

Testa parva, ovata, utrimque attenuata, solida, nitente, apertura spira æquanti ; anfr, 6½, *parum convexis, crebre costatis, et concinne crebre, regulariter liratis, superne late sulcatis ; costis angustis, parum elevatis, ultimo anfr. evanidis; liris supra costas transeuntibus; nucleo* 1½ *anf. polito: apertura angusta, fauce lirata, ovata; sutura marginata, labro acuto, columella duobus plicis subobsoletis.* Long. 6½, lat. 3.

A rather ovate, solid, shining little shell, with the aperture and spire about equal ; closely, finely ribbed on the spire and covered with small, neat, very distinct liræ, which pass over the ribs. The ribs become obsolete on the last whorl, and on the upper part of every whorl there is a broad, wide groove-like space below the suture which is margined. The columella has only two very indistinct tooth-like plaits. The labrum is thin, and the throat lirate. There is a constriction of the labrum at the suture which with the flat sulcus at the upper part of the whorl gives this shell the aspect of a *Daphnella*. The obsolete plaits on the columella bear out this resemblance.

Mitra othone. Pl. 2, fig. 4.

Testa parva, ovata, utrimque attenuata, solidiuscula; anfr. 6, *æqualiter, crebre cancellata, liris longitudinalibus et spiralibus ita ut textilosa apparent, sutura haud impressa, spira conica, ultim. anfr. haud æquanti; apice acuto, apertura anguste ovata, labro solido, simplici; columella definita,* 4 *plicata,* 2 *mediis majoribus. Long.* 10, *lat.* 4½. *Nomen specificum a Gr. οθονη (linteum,) derivatur ab aspectu texturato totius testæ.*

This is a small *Mitra*, the whole surface of which is closely cancellated so as to resemble linen. The suture is not impressed, *marginata; apertura elongata, labro simplici, columella contorta, encausta, marginata,* 4 *plicis elevatis, valde obliquiis insignita.* Long. 7, lat. 2¾.

This shell is easily distinguished by its narrow elongate form devoid of ornament, polished, but with rather conspicuous lines of growth. The columella is twisted, highly enamelled, margined with a distinct rounded raised line, and with four raised, very oblique plaits. The spire is very short, conspicuous, with a fine margined suture and obtuse apex.

MITRA ALOKIZA. Pl. 2, fig. 12.

Testa parva, angusta, fusiformi, turrita, spira quam apert. longiori, solida, nitente; anfr. 6, *parum convexis, regulariter concinne spiraliter striatis; striis crebre, eleganter punctatis; lineis incrementi conspicuis, sutura bene impressa, conspicue marginata; apertura anguste ovata, labro simplici, columella exacte definita, triplicata.* Long. 11, lat. 3½.

This small *Mitra* is in shape a miniature of our common *M. badia* but probably more slender in proportion to its length. Its peculiar distinction lies in the whorls being regularly and distantly striate and the striæ being very elegantly and closely dotted. It is probable that in less worn shells these dots would seem to be caused by very small riblets. The suture is well impressed and very distinctly margined. The aperture is short and the columella has three plaits, the posterior the largest.

PLEUROTOMA CONSUTILIS. Pl. 2, fig. 5.

Testa parva, fusiformi, utrimque acuta, spira quam apertura paulo longiori, tenui; anfr. 7, *medio angulatis, sub-elongatis, undique oblique subtillissime, concinne, cancellatis, supra carinam late, haud profunde sulcatis, sulco medio funiculato, transversim lineis parvis, curvatis, crebre sculpto; sutura sulco angusto marginata; apertura lata; labro medio valde producto, sinu lato, profundo, columella exacte definita, polita; canali contorto.* Long. 11, lat. 4, long spiræ 6½.

Though this shell is destitute of any striking ornamentation, it is easily distinguished from the species already described. It is very neatly, obliquely cancellate, the transverse and longitudinal lines being very neat, distinct, equal, and sufficiently distant to leave very definite rhomboidal spaces. The whorls are keeled in the middle, about which there is a rather broad, flat, shallow, groove which corresponds to the sinus. It has a fine line in the centre, and is closely transversely marked with elegant curved ribs. The aperture is wide, the labrum much produced in the middle, and the sinus is very conspicuous, wide and deep. The canal is twisted. The neat distant cancellation, and the fine lines on the groove give the surface an appearance of open thread work, hence the name.

PLEUROTOMA RHOMBOIDALIS. Pl. 2, fig. 9.

Testa parva, rhomboidea, tenui, nitente, apice obtuso; anfr. 4½, *ultimo longe majori, superne obtuse angulato et oblique, undulose, crebre eleganterque costato, spiraliter tenue lirato; infra spiraliter, distanter carinato; supra angulum late sulcato; sutura anguste canaliculata et*

PLEUROTOMA CLARÆ. Pl. 3, fig. 11.

Testa elongato-fusiformi, tenui, opaca; anfr. 6½, *convexis, declivibus, undique tenue, spiraliter liratis, spira nodoso-costatis, penult. anfr. absoletis, ult. evanidis, apertura late ovata, labro tenui, sinu lato, postico, profundo; ultimo anfr. ad peripheriam obtuse angulato.* Alt. 11, lat. 4.

This fossil must be mainly distinguished by the absence of any ornament. The upper part of the spire is ribbed and in the lower whorls, these ribs become obsolete. The periphery of the last whorl is obtusely angular and the whole shell is covered spirally with close fine thread-like liræ. The aperture is broad and the sinus wide, deep, and conspicuous. A peculiarity in this shell is that the lines of growth scarcely show at all.

Fig. 12 on the same plate appears to be a variety of the same shell in which the ribs are closer and more crescentic on the spire and the lines of growth are more distinct.

DRILLIA INTEGRA. Pl. 3, fig. 4.

Testa elongato-fusiformi, spira quam apertura longiori, tenui, polita; anfr. 6½ *parum convexis, conspicue costatis, superne late sulcatis; regulariter, spiraliter, concinne, liratis; costis latis, rotundatis, obliquiis; striis incrementi conspicuis, apertura rhomboidea, quasi integra; labro incrassato, sinu postico lato, profundo, cum sulco anfractuum concurrente; labio crasso, reflexo, postice elevato, canali brevi; nucleo (*2½ *anf.) lævi; sutura marginata.* Alt. 9½, lat. 4, long spiræ 6.

Shell elongately fusiform, spire longer than the aperture, thin, polished; whorls 6½ slightly convex, conspicuously ribbed, broadly sulcate above, regularly, spirally, neatly, lirate; ribs wide, rounded, oblique, lines of growth conspicuous. Aperture rhomboid, almost entire. Labrum thickened, sinus deep, broad, corresponding with the groove in the whorls; lip thick, reflexed raised posteriorly; canal short, nucleus of 2½ whorls, smooth, suture marginate.

This fossil is a good deal like some existing forms, but differs in the peculiarly thickened almost entire aperture and the broad groove on the upper part of the whorls. The spiral liræ are also very neat and characteristic.

DRILLIA STIZA. Pl. 2, fig. 11.

Testa parva, elongato-fusiformi, turrita, spira quam apert. lonqiori, nitente; anfr. 7½, *planatis, supra suturam late sulcatis, et* 2 *lirulis cinctis, deinde carinatis, postea uni liratis, una serie granulorum,* 2 *lirulis et una carina zonatis; undique crebre, longitud. undulose, striatis; sutura late sulcata; apice obtuso; nucleo* 2½ *anf.* 1½ *lævib. uni-costato; apertura lata, labro simplici, labio reflexo, crasso, canali brevi, acuto, sinu inconspicuo serie granulorum concurrente.* Long. 9½, lat. 3½, long spiræ 5½.

A small, elongately fusiform shell, with the following ornamentation on the whorls. Immediately above the suture there is equal the interstices in width. The canal is very long, straight and slender.

Fusus ino. Pl. 3, fig. 10.

Testa parva, fusiformi, opaca; anfr. 5½, *rotundatis, crebre spiraliter liratis, liris magnis et parvis alternantibus; sutura bene impressa, apertura ovata, canali prælongo, contorto, labro simplici, columella exacte definita, polita, basi unicarinata nucleo tumido* (2½ *anf.*) *lævi.* Alt. 16, lat 6.

A small fusiform, opaque shell of 5½ whorls, which are rounded and finely, spirally lirate, the liræ alternating, large and small. The canal is long and twisted. The main distinguishing feature is a peculiar keel, which runs round the basal whorl and terminates in the outer lip at the origin of the canal. The apex is obtuse, the nucleus of 2½ smooth tumid whorls.

Fasciolaria tenisoni. Pl. 3, fig. 3.

Testa ovato-fusiformi, parva, solidiuscula. apice obtuso; anfr. 5½ *late costatis et tenuiter crebre carinatis, superne angulatis; costis distantibus, elevatis, rotundatis, ad angulum desinentibus; carinis angustis, parvis, supra costas transeuntib.; interstitiis creberrime, subtillissime, longitud. striatis, et aliquando funiculo insignitis, sutura anguste canaliculato; nucleo depresso, polito; apertura late ovata, labro solido, simplici; columella definita, polita, plica postica inconspicua, canali elongato, recto.* Long. 20, lat. 8½,c anal 5,

Shell ovately fusiform, small, rather solid, apex obtuse, whorls 5½, broadly ribbed, keeled with close fine keels, angular above: ribs distant, raised, rounded, ceasing at the angle; keels narrow small, round; interstices closely and very finely, but neatly and distinctly striate, sometimes with a fine spiral thread, Suture narrowly canaliculate; nucleus depressed, polished; aperture broadly ovate, labrum solid, simple; columella defined, polished, plait posterior, inconspicuous, canal long, straight.

I have named this shell after Col. King Tenison.

COLUMBELLA HEMIOTHONE. Pl. 3, fig. 8.

Testa fusiforme-ovata, parva, solidiuscula, nitente, opaca; anfr 7, convexis 3 *ult. crebre, quasi textilose cancellatis,* 2 *spiræ distanter regulariter costatis,* 2 *anfr. nucl. lævibus; apertura ovata, labro tenui, simplici; columella definita, polita, parum planata, canali vix recurvo. Long* 9½, *lat.* 3½. *Liræ longitud. anfract. ult. paulo majori. Basi* 3 *lineis granulosis, spiraliter cinctis.*

Shell fusiformly ovate, small, rather solid, shining opaque. Whorls seven, convex. The three last are very closely and finely cancellate, but the longitudinal lines are rather more conspicuous and rib-like, and the base of the last whorl has three spiral lines of granules rather distant from each other. Two of the whorls of the spire are conspicuously ribbed with rather convex ribs. and the two whorls of the nucleus are smooth. The aperture is ovate polished, sulcate; labrum marked with a varix, concave, columella hidden, canal short, recurved. Suture well impressed and with a slender thread round it.

I am in doubt about the genus of this and the following shell.

? ÆSOPUS CREBRECOSTATUS. Pl. 3, fig. 5.

Testa parva, elongato-fusiformi, turrita, solidiuscula, nitente; anfr. 6½, *rotundatis, declivibus, crebre costatis; filis spiralibus minutis cinctis; costis acutis, curvatis, ultim. anfr.* 22; *filis supra costas transeuntibus; sutura bene impressa; nucleo* 1½ *anfr. polito; apertura lata, labro varice incrassato, columella polita, postice tuberculato; fauce encausta, canali brevi, parum recurvo.* Long. 9 lat. 4.

Shell small, elongately fusiform, turretted, somewhat solid, shining, whorls 6½, rounded, sloping, closely ribbed, and spirally girdled with very fine threads. The ribs are acute, curved, 22 on the last whorl; threads passing over the ribs, suture well impressed; nucleus of 1½ whorls, polished. Aperture broad, a varix on the outer lip, the throat enamelled, and the columella with a posterior tubercle. The canal is very short and slightly recurved.

TRITON WOODSII, R. Tate, M.S. Pl. 3, fig. 1—2.

Testa late fusiformi, parva, tenui; anfr. 6, *convexis, medio angulatis undique crebre, cincinne, tenuiter cancellatis, vel quasi textile decussatis; varicibus conspicuis angustis, elevatis; apertura late ovata, fauce encausta, labro varicoso, ad marginem acuto, intus dentato; labro definito, parum reflexo; canali prælongo, aperto, obliquo, recurvo, nucleo lævi, apice verticaliter disjuncto.* Long. 12 lat. 9.

Shell broadly fusiform, small, thin, whorls 6, convex angular in the middle, covered all over with a close, fine cancellation, which is very like a woven fabric. The varices are conspicuous, narrow, and much raised; cancellate like the body of the shell. The aperture is widely ovate with the throat enamelled, and the labrum varicose, with an acute margin, dentate inside; lip defined and slightly reflexed; canal rather long, open, oblique, and recurved. The nucleus is smooth, rather large with the apex disjoined and curiously twisted up into an erect position.

This fossil had been figured by me when I received from Prof. Tate the information that he had already named it after me in a MS. account of the Murray fossils. In publishing my notes under his name, I beg to thank him at the same time for his courtesy, and to apologize for having anticipated his notes.

TROPHON SUCCINCTUS. Pl. 4, fig. 6, 6a.

Testa elongato-turbinata, tenuiuscula; anfr. 5½, (*nucleo* 1½ *incluso*) *subglobosis, superne subplanatis, undique æqualiter, distanter, acute carinatis, et conspicue, undulose striatis, lineis, incrementi; carinis rugulosis, subtus concavis, elevatis, superne* 3 *parum majoribus, prope apicem quasi cancellatis, interstitiis profundis, rotundatis; nucleo tumido, lævi; apertura lata, ovata, labro tenui, crebre undulato, intus sulcato; labio definito, polito, canali obliquo, longo, recurvo; sutura profunde canaliculata.* Long. 24, lat. 16, long spir. 8, long. canal 7.

This elegant species is turbinate in shape and rather thin. It is covered all over with equal, sharp, and high keels which are rendered rather rugged at the edge from the undulose lines of growth which cover the shell longitudinally. Three of these keels are a little larger and more distinct at the upper part of the whorl, which is a little flat towards the suture. The canal is rather long, oblique and recurved, the outer lip is thin and closely undulate, from the keels which are hollow underneath. The throat is regularly grooved and the nucleus tumid and smooth. The habit and form of this shell brings it near to *Purpura*, but I think it finds its best place in the genus wherein I have placed it. Prof. Tate informs me that his largest specimen is 1¼ inch long and ¾ inch wide.

CASSIS EXIGUA. Pl. 2, fig. 7.

Testa parva, ovata, subventricosa, nitente; anfr. 3½. *superne obtuseangulatis, et corrugatis, spiraliter concinne striatis, et longitud. crebre irregulariter corrugato sulcatis, variciferis; striis cerebris, undulosis, sutura granulose marginata, nucleo globoso, lævi, apertura sinuata, utrimque curvata; labro crassa, rotunduto, intus obsolete dentato; labio inconspicuo, postice uni-tuberculato. antice* 4 *dentibus, gradatim crescentibus insignito; canali lato, brevissimo.* Long. 10, lat. 6½.

Shell small, subventricose, shining, whorls 3½, obtusely angular above and corrugated, neatly, spirally striate and lengthwise closely, irregularly, corrugately sulcate; varices at about every half whorl. Striæ close and undulating, suture granulosely marginate, nucleus globose, smooth and shining of one whorl, and very conspicuous. Aperture sinuous, curved at each end; labrum thick, rounded, obsoletely dentate within; lip inconspicuous, with one posterior tubercle and four teeth gradually increasing in size on the anterior end of the columella, canal broad and very short.

This is evidently a young shell, but not immature so that it can be safely described. The last whorl and the mouth is perfectly complete, and the mamillate or pullus-like nucleus show what the earlier stages are. In size it cannot be compared to any existing species, but in ornamentation there is a faint approach to our living Australian *C. paucirugis*. That shell is more granular. In the fossil the corrugations at the angle are a double series of ribs arising at different parts of the angle and near the mouth they are faintly continuous with the sulci of the whorl.

CANCELLARIA LATICOSTATA. Pl.2, fig. 8.

T. parva, umbilicata, ovata, utrimque acuta, ad suturam constricta et late, profundeque canaliculata; anfr. 5, *late costatis (ult. anfr.* 10*), spiraliter distanter valide liratis, longitudinater striatis, striis,* *crebris, subtillissimis; costis subplanatis, ad angulum eleganter superne rotundatis, interstitiis angustis; liræ rotundatis, parum elevatis, apice lævi, polita; apertura integra, antice et postice obtuse angulata; labro simplici, tenui; fauce distanter lirata, labio reflexo columella biplicata, umbilico angusto, profundo.* Long. 6, lat. 3½.

Shell small, umbilicate, ovate, acute at both ends, rising in pagoda-like stages from the deep channel and constriction at the suture. Whorls 5, broadly ribbed (10 on last whorl), distinctly and distantly, spirally lirate, striate lengthwise, striæ close, and very fine. Ribs elegantly rounded at the suture so as to give a coronate appearance to each whorl. The liræ are rounded and not elevated, and the ribs are separated by a rather narrow depression. Apex smooth and polished. Aperture entire, angular at each end. Throat broadly grooved; labrum simple, lip reflexed, umbilicus narrow but deep. Two plaits on the columella.

This is a very remarkable form of *Cancellaria*, very distinct from any living form in size, and the peculiar style of its ornament.

Niso psila. Pl. 1, fig. 6.

Testa parva, pyramidata, turrita, politissima; anfr. 9, planata, striis incrementi distanter insignitis et striis spiralibus, subtillissimis regulariter cinctis; ad peripheriam obtuse angulatis; umbilico extus carinato; apertura integra, antice et postice angulata. Alt. 7, lat. vix 3.

Shell small, pyramidal, turretted, very smooth, and highly polished, showing rather distantly and regularly longitudinal depressed lines of growth. Regularly and distantly, spirally, striate, but in the faintest possible manner, and only visible with a lens. The periphery is obtusely angled. The umbilicus is sharply keeled externally. The aperture is entire, angled above and below.

This fossil occurs in the Murray beds, according to Prof. Tate who also considers that the drawing does not represent the shell in the manner it is familiar to him. The whorls are more numerous and not so regularly increasing in size. I believe that this fossil has a wide vertical as well a horizontal range.

CYLICHNA EXIGUA. Pl. 2, fig. 6.

This fossil I have figured as one of those specimens which may perhaps be identified with Quoy and Gaimard's shell, *C. arachis*. It is very much smaller, is highly polished, the apical foramen much larger in proportion to the size, the umbilicus marked. The resemblances are the general form and the peculiar spiral undulating lines. The latter feature may however be common to more than one species. A shell of the size and the peculiar ferruginous periostrata of the existing *Cylichna arachis*, I have not met as a fossil at Muddy Creek. If the specimen figured be not new I propose for it the name of variety—*exigua*. It should be further remarked that in the fossil the apex is flat, obliquely truncate, the labrum remarkably posteriorly produced, and the spiral grooves are well marked, deep in proportion to the size and not so numerous.

EXPLANATION OF PLATES.

Plate I.

Fig. 1.—*Eulima Danæ*, enlarged.
,, 2.—*Leiostraca acutispira*, enlarged.
,, 3.—*Conus pullulascens*, much enlarged.
,, 4.—*Conus pullulascens*, worn specimen, much enlarged.
,, 5.—*Leda lucida*, much enlarged.
,, 6.—*Niso psila*, much enlarged,
,, 7.—*Crossea parvula*, much enlarged.
,, 8.—*Trivia mimima*, *a.* seen from above, *b.* mouth, much enlarged.
,, 9.—*Cerithium eusmilia*, much enlarged.
,, 10.—*Triforis Wilkinsoni*, much enlarged.

Fig. 11.—*Cerithium salteriana*, much enlarged.
,, 12.—*Triforis planata*, much enlarged.

Plate II.

Fig. 1,—*Trophon polyphyllia*, much enlarged.
,, 2.—*Nassa Tatei*, young specimens, much enlarged.
,, 3.—*Mitra daphnelloides*, much enlarged,
,, 4.—*Mitra othone*, twice nat. size.
,, 5.—*Pleurotoma consutilis*, enlarged.
,, 6.—*Cylichna exigua*, much enlarged.
,, 7.—*Cassis exigua*, twice nat. size.
,, 8.—*Cancellaria laticostata*, much enlarged.
,, 9.—*Pleurotoma rhomboidalis*, much enlarged.
,, 10.—*Mitra coarctata*, much enlarged,
,, 11.—*Drillia stiza*, much enlarged,
,, 12.—*Mitra alokiza*, enlarged.

Plate III.

Fig. 1.—*Triton Woodsii*, Tate MS,, twice nat. size.
,, 2.— ,, ,, ,, ,, twice nat. size.
,, 3.—*Fasciolaria Tenisoni*, twice nat. size.
,, 4.—*Drillia integra*, twice nat. size.
,, 5.—*Æsopus crebrecostatus*, twice nat. size.
,, 6.—*Fusus styliformis*, enlarged.
,, 7.—*Mitra dictua*, enlarged.
,, 8.—*Columbella hemiothone*, enlarged.
,, 9.—*Æsopus semicostatus*, enlarged.
,, 10.—*Fusus Ino*, twice nat. size.
,, 11.—*Pleurotoma claræ*, enlarged.
,, 12.—*Pleurotoma claræ*, var., twice nat. size,

Plate IV.

Fig. 6—6a.—*Trophon succinctus*, nat. size.

ON SOME NEW MARINE SHELLS.

BY THE REV. J. E. TENISON-WOODS, F.L.S., F.G.S., PRESIDENT LINNEAN SOCIETY.

The following marine shells were obtained by Mr. John Brazier C.M.Z.S., from some siftings from the steam dredge, when anchored near the Sow and Pigs, Port Jackson. They are undoubtedly new and interesting additions to our N. S. Wales fauna.

NASSA PERITREMA. Pl. 4, figs. 5, 5a.

N. t. parva, ovata, antice dilatata, lactea, sub-pellucida, nitente; anfr, 5½, convexis, concinne costatis, superne conspicue uni-sulcatis, regulariter, distanter striatis; costis angustis, acutis, subimbricatis, 15 16 *in ult. anfr.; striis regulariter incisis; striis* 5 *in ult. anfr. sub-latis, æqualibus; sutura coronata, late canaliculata; apertura rotunde ovata, labro tenui, intus concavo, labio late reflexo, polito, postice tuberculato; canali contorto, cancellato.* Long. 7, lat. 4, long. spiræ 3½.

Shell small, ovate, dilated anteriorly, milky white, sub-pellucid polished, and shining; whorls 5½, convex, neatly ribbed, with one conspicuous sulcus above; regularly, distantly striate; ribs narrow, acute, somewhat imbricate or over-lapping, 15 to 16 in the last whorl and cut regularly into sharp, rounded edges by the spiral striæ. These latter are very little smaller than the sulcus, rather deep, flat, and even, there are five equidistant ones on the last whorl and a few closer and smaller round the canal. Suture coronate and broadly canaliculate. Aperture roundly ovate; labrum thin, hollowed underneath; one of the ribs appears like a varix. The lip is polished, widely spread over the columella, with a posterior tubercle. Canal twisted, canaliculate.

This small *Nassa* can only be compared in point of size to *N. compacta* Angas, amongst the N. S. Wales numbers of the genus, but it is shorter, stouter, divested of any coloring, and sub-pellucid. The peculiar, sharp, sub imbricating ribs which are regularly cut into rounded eminences by the striæ, will also serve to distinguish it. It appears not to be uncommon in Port Jackson at a few fathoms in sandy mud. *Nassa Jacksoniana* Kiener, is often pellucid but much larger than this shell. *Nassa rufocincta* Adams, does not appear to me to differ from *N. compacta*. *N. fasciata* Lam, is the largest on the southern coast, and is uncommon in all Tropical Australia, except the west. It is very conspicuously granular. *N. pauperata* Lam, is a little smaller but a stouter and more squat shell with whorls obsoletely granular.

CLANCULUS UNDATOIDES, Pl. 4, figs. 7, 7a.

C. t. turbinato-conoidea, parva, solidiuscula, opaca, rufo-rosea, indistincte purpurea maculata; anfr. 5⅓, *planatis, rapide crescentibus, infra marginatis,* 6 *serie granulorum cingulatis; sutura coronata, late canaliculata; granulis infra parvulis, superne gradatim majoribus; peripheria tesselata,*2 *majoribus, cingulis granulorum marginatis; basi planata,* 8 *lineis spiralibus, granulosis, rotundatis, roseis ornata; apertura rhomboidea, labro incrassato, intus lirato; columella obtuse bituberculato; umbilico angusto, albo. Alt. et diam.* 10. *mil.*

Shell turbinately conoid, rather small, somewhat solid, opaque, reddish rose with indistinct purple spots; whorls 5⅓, flat, increasing rapidly, margined below, girdled with six series of rounded granules of which the lowest line is the smallest and increasing gradually in size to the suture, which is coronate and broadly canaliculate. The base is flattened, ornamented with 8 spiral lines of rounded rose colored granules. Aperture rhomboid, with a thickened labrum, which is lirate inside; columella with two obtuse, blunt tubercles above and below and intermediate small obsolete teeth. Umbilicus narrow, white, with a rather conspicuous white margin.

In shape and appearance this shell is a little like *C. undatus* Lam., but is smaller and the whorls flat. The following is a synopsis of the Port Jackson *Clanculi*. A. Large, more than 20 mil. high, *C. maugeri*. Less than 20 mil.: B. Shell thin and acutely conical, whorls and base flat, *C. omalomphalus*. Shell solid whorls rounded, stained a vivid green, *C. clangoides*. Whorls less rounded, small, pale brown, *C. gibbosus*.

I am inclined to think that *C. omalomphalus* Adams, is only a small variety of *C. variegatus* Adams, which is common on all the South Coast, but is not seen in N. S. Wales. With this species I also identify *C. zebrides* of the same author. *Thalotia zebrides* is a common N. S. Wales shell which must not be confounded with it. I think also that *C. gibbosus* Adams is a doubtful species. The difference between the present species *C. undatoides* and *C. variegatus* is that it is smaller, more solid, whorls more rounded, umbilicus narrower, and the coloring deeper.

TEREBRA VENILIA. Pl. 4, fig. 2, and 2a.

T. t. elongato-pyramidata, turritissima, nitente, luteo-albida, linea pallide castanea zonata, apice acutissimo, livido, translucente; *anfr.* 20, *parum convexis, ad suturam constrictis, irregulariter crebre costatis superne conspicue sulcatis, infra regulariter* 4—5 *striis insignitis; costis obtuse angulatis, (ult. anfr.* 20, *circiter) lineis incrementi aliquando confusis; apertura ovata, postice coarctata, antice expansa; labro tenui, labio reflexo, crasso; canali contorto brevi, corrugato, marginato; sutura canaliculata.* Long. 42, lat. 7½.

Shell elongately pyramidal, turretted, shining, yellowish white zoned with a pale chesnut line; apex very acute, livid, translucent; whorls 20, flattened, constricted at the suture, closely and irregularly ribbed, conspicuously grooved a little above the middle, and below spirally striate with 4 to 5 rather deep, distinct lines. Ribs obtusely angular, about 20 in the last whorls, sometimes confused with the lines of growth. Aperture ovate, narrowed above and expanded anteriorly. Labrum thin, simple; lip reflexed thick; canal short, twisted, corrugated and margined; suture channelled.

I have figured by the side of this species a back and front view of *T. Brazieri*, Angas. The differences are that the latter is much smaller, has much less distinct ribs, no medium sulcus, no spiral striæ, the whorls are faintly coronate, the suture not so well impressed and the color is a more decided yellow with the ribs a pronounced reddish chesnut.

EXPLANATION OF FIGURES.

Plate IV.

Fig. 1, and 1a.—*Terebra Brazieri*, Angas, slightly enlarged.
,, 2, ,, 2a.—*Terebra venilia*, enlarged.
,, 5, ,, 5a.—*Nassa peritrema*, with side view and elevation of costa enlarged.
,, 7, ,, 7a.—*Clanculus undatoides*, enlarged, and view of base nat. size.

ON SOME FRESHWATER SHELLS FROM N. GUINEA.

BY THE REV. J. E. TENISON-WOODS, F.G.S., F.L.S., PRESIDENT LINNEAN SOCIETY, N.S.W., &c., &c.

The following shells were placed in my hands for description

Shell small, elongately ovate, with an acute spire, intense olive green, approaching black, but sub-diaphanous with transmitted light when the shell is a pale sea green, not shining; whorls 6½, (with the nucleus decollated,) scarcely convex, sometimes obsoletely ribbed, regularly, distinctly striate spirally, these striæ are close and fine behind the columella. The suture is not impressed, but sometimes rendered faintly corrugate by the obsolete ribs. Aperture entire ovate, labrum thin, produced anteriorly, columella inconspicuous, but slightly flattened in front.

MELANIA WILKINSONII. Pl. 4, fig. 4.

M. t. elongato-turrita, spira attenuata, nitente, pallide olivacea, maculis vel strigis fulvis, longitudinalibus ornata; anfr. 6-7, *elongato rotundatis, declivibus, crebre spiraliter sulcatis, interdum indistincte, longitud. costatis; sutura, bene impressa; apertura ovata, labro tenui, antice producto; labio tenuissime reflexo. Long.* 10-20, *lat.* 3-7. *long spiræ ⅔ circiter totius testæ.*

Shell elongate with the spire attenuate, but sometimes ovate with an almost conical spire, thin, shining, pale olive with spots or stripes of pale brown disposed lengthwise. Whorls 6 to 7 elongately rounded, sloping, closely, spirally grooved, and in many specimens indistinctly ribbed lengthwise; suture well impressed, and in the upper whorls having a constricted appearance; aperture rather broadly ovate, labrum thin, produced anteriorly, lip very thinly spread over the columella, which is sometimes rounded, sometimes flattened anteriorly.

The difference between this shell and the preceding is that it is narrow, attenuated in the spire, pale olive, spotted with brown, and very *closely* spirally grooved, while the grooves on *M. daktulios* are very distant.

MELANIA SCALARIFORMIS.

M. t. elongata, pyramidata, intense olivacea, opaca, solida; anfr 7, *decollatis fere planatis, vix declivibus, eleganter costatis; costis regularibus, crebris, rotundatis, parum curvatis, a sutura ad suturam* *permanentibus, ultim. anfr. evanidis, interstitiis regulariter striatis; apertura late ovata, postice attenuata, labro tenui, antice producto, labio reflexo, haud lato, peripheria obtuse vel subacute angulata.* Alt. 10-20, lat. 3½-8.

Shell elongate, pyramidal, intense olive, opaque, solid; whorls 7, always decollate, almost flat, scarcely sloping, elegantly ribbed; ribs regular, close, rounded, slightly curved, remaining the same from suture to suture and disappearing on the last whorl, interstices regularly striate, aperture widely ovate, attenuated posteriorly, labrum thin, produced in front, lip reflected, not wide, periphery obtusely, or in small specimens, subacutely angular.

I am not sure that this should not be regarded as a mere variety of the *M. Wilkinsonii.* The ribs vary much in all the specimens, and as they are faintly present in the last named shell and the spiral grooves are the same, intermediate grades of the other luxuriantly in one place, with only a struggling and precarious existence in others. As an instance, I may mention *Cryptostemma calendulacea*, R. Brown, of which I saw a solitary plant the other day in one of the back streets of Brisbane. It is a South African weed, which has so overrun the pasture lands of the colony of South Australia as almost totally to destroy the indigenous grasses and useful fodder plants. It has a very rapid and succulent growth in the early spring, and obscures the ground so as to stop all other growth; but on the first of the hot weather it withers away, leaving nothing but a dried up mass which easily falls to powder, and a woolly pappus around its seeds which clings to everything, and is especially injurious to wool. Our Queensland climate differs so much from that of South Australia, especially during the spring months, that there is no likelihood of its spreading to any extent on the coast country; but should it once obtain a footing out in the west—as for instance, on the Diamantina—it would soon change the character of the country, and destroy a large proportion of the fine grasses of the district. It would be well if sheep-farmers would become acquainted with its features, as a little attention in the beginning might prevent the growth of the pest. It is somewhat like Dandelion, but has a *solid* flower stalk, with showy flowers of very pale yellow, with a very deep purple centre, which at a distance looks like black. It was introduced into Adelaide in 1840 or 1841, and soon covered the whole of the Adelaide plains. It is 10 years since I noticed it first in Queensland, and since then no doubt it has been repeatedly introduced either in hay or with seeds, or in earth around plants. It has made vigorous attempts to settle in the country, but the climate has hitherto kept it back. Climate has not been so successful with another pest, *Centaurea melitensis*, Linn. This is a prickly-headed composite plant from the Mediterranean, which many farmers know by the name of cockspur. It is common throughout the Darling Downs, the Maranoa country, &c. This weed was introduced into South Australia very early in its history, and proved most troublesome along the roadsides, headlands of farms, &c. It was often accompanied by a still worse species, *C. solstitialis*, Linn. The thistle *Cirsium lanceolatum*, Scop, which is troublesome in the south, but especially in Tasmania, has also overrun some few places in Queensland, much to the annoyance of both farmer and grazier. *Onopordon acanthium*, Linn., is probably also in the colony; but I have seen no specimen of it. Although the much larger thistle, *Carduus marianus*, Linn., has been introduced several times, it seems unable to get a strong footing. In South Australia, Victoria, and Tasmania it is very abundant; always growing in dense patches, of sometimes many acres in extent. It is not now regarded with such disfavour as formerly. It grows in poor soil, and produces an abundance of large succulent leaves, even in the driest seasons. When pasture is scarce, horses, cattle, and sheep eat it readily, and thrive upon it. It is fortunate that they do so, as in the recent droughts it be seen now and again on the watercourses around Brisbane, and on many of the farms along the Brisbane River. *P. lanceolata* is not at all uncommon in somewhat the same localities. The Pimpernel (*Anagallis arvensis*, Linn.) meets one's eye at many of the old camps in southern Queensland. The blue variety is frequently to be seen about Brisbane. Warmth of climate does not affect this species, which is as abundant in Tasmania, Victoria, and South Australia, as it is here. It seems to follow the footsteps of man quite closely. As one of the early colonists of South Australia, I can bear testimony to the fact that it was with the grass *Poa annua*, Linn., among the first European genera to become naturalized in the country. It is rather difficult to explain how it has managed to spread so far and widely, for one never meets with it under cultivation, and it is not in Australia, as in England a favourite with the children. When even educated persons are informed that it is the pimpernel of the poets and the poor man's weather-glass of the village herbalist, they look with astonishment at the little stranger, most of them deeming it quite unworthy of its popularity. Yet its spiral vessels form some of the most useful and instructive microscopic objects we have in vegetable life, and it has one other point of distinction—that of being the only genus of the order Primulaceæ which has become naturalized in Australia.

Passiflora edulis, Sims, or the common passion-fruit, sometimes known as the small grenadilla, is one of the commonest climbing plants of our scrubs. This is an exception to the rule that introduced plants are generally noxious weeds. A more acceptable case of acclimatization could hardly be found, as its fruits are abundant, ripen readily, and prove most acceptable to the traveller.

Of the order Verbenaceæ we have naturalized one or two most troublesome weeds. One is the huge, rambling prickly bush, *Lantana camera*, Linn., of tropical America. It has spread to an alarming extent, and forms an impenetrable thicket on the banks of streams, deserted farms, and the edges of scrubs. It is equally abundant all round Port Jackson. Its abundance of showy flowers all the year round is a poor compensation for the good land it encroaches upon. But the Buenos Ayres verbena (*V. bonariensis*, Linn.,) is a far more troublesome weed in cultivation, and has spread to a greater extent along creeks, &c., in fact everywhere where the land is moist and rich. It grows to a height of 8 and 10 feet, and as it is not eaten by stock has a fair chance of covering the country. It is common enough in New South Wales, and is becoming abundant on the banks of the Nepean River. There is one more member of the order, a garden species of verbena, which is met with here and there along the Brisbane River in large patches. This is *V. venosa*, Gill, which also comes from Buenos Ayres. Few of the garden species surpass it in beauty, and should it get a fair start few will surpass it as a weed on account of its running wiry roots, every small piece of which if left in the ground infallibly produces a plant.

about towns, but is not seen in the country. It has a very showy flower, but is a poisonous weed, not only useless, but dangerous.

One would not easily suppose that the common prickly pear (*Optunia vulgaris*, Mill) would become a troublesome weed, or make much progress; yet it has spread widely and rapidly in Queensland; and in New South Wales, especially along the Upper Hunter, its spread is really formidable. It occupies large patches of some of the best lands, and no good means have yet been devised to eradicate it. Its fruits are eaten by many animals, and in that way the seeds become carried about. It is a purely American plant, and, where it becomes spread into large patches, forms a striking contrast to the Australian vegetation. The climate and soil seem favourable to the genus, and there are two other species which are naturalized in Australia.

Among the Solanaceæ we have a goodly number of naturalized plants. The common thorn apple (*Datura stramonium*, Linn.) has become a great nuisance in all the colonies of Australia, but more in Queensland than elsewhere. It has been thought to have caused the death of stock now and again; but I imagine such instances must be rare, as it is seldom eaten by stock. The harm it does is the room which it takes up, which would in most cases be otherwise occupied by good grass. The beautiful *Solanum sodomæum*, Linn., with orange-colored fruits, is a very common object in our forest country. It is also met with at times in the scrubs, but seems to prefer the former situation. It is often imagined that there are two species of this plant because of the pale or variegated tints of the fruit, but this difference is due to some unfavourable circumstance in its growth. The species is indigenous to the shores of the Mediterranean, and was first grown here as a garden plant. I pass over the smaller species of the order, such as the bittersweet, and which are found every where near cultivated ground.

It is rather astonishing that so very few of the large order Leguminosæ have become naturalized amongst us. We have

Cassia lævigata, Willdenow, which has escaped from our gardens. This can scarcely be look upon as a troublesome weed, but rather an elegant shrub. This is not the case with another member of the same sub-order, *Cæsalpinia sepiaria,* Roxb , which, has quite overrun some of the river and creek scrubs, making them quite impenetrable. It was originally introduced from India for the purpose of planting for hedges. I can hardly understand how it can answer, as its wonderful rambling habit seems to me to make it quite unfit for such a purpose.

Of our cultivated fodder plants we have none naturalized. This is a curious fact, since lucerne and clover thrive well, and produce good crops, and the seeds must to a certain extent be spread about by the animals that feed upon them. The only allied plants met with at large and common throughout the colony are the small-flowered Mellilot (*Melilotus parviflora,* Desf) and deadly narcotic effect of the seeds, which are said to be more powerful than opium.

The order Cruciferæ contains a large number of weedy plants, but few of them are found naturalized in Queensland. I don't remember to have seen more than two—the little garden weed known as watercress (*Senebiera didyma*, Pers.), and the well-known watercress (*Nasturtium officinalis*, R. Brown), which has become naturalized in many of the streams of the main range. I am sorry I cannot give the name of the public benefactor who introduced this wholesome and useful plant into our Queensland streams; but I may take the opportunity of stating that it was introduced into the South Australian watercourses in about 1842 by Mrs. S. Davenport, a lady who took great interest in horticulture, and to whom that colony is indebted for the introduction of many useful plants.

Of the order Malvaceæ, several genera which are common are regarded as introduced, but they are all indigenous to Australia, with the exception of *Malva rotundifolia*, Linn. But those which are very troublesome as weeds have been brought from one part of the colony to the other. I need hardly refer to the well-known pest, *Sida rhombifolia*, Linn., which has now found its way very extensively into the southern colonies. It is not a foreigner, however, being indigenous to Northern Australia. We know nothing of the history of its spread, which is unaccountably rapid and formidable. Why it should have existed all the years it did in North Australia, without spreading, and then come trooping all over the land, must remain an unsolved problem. A beautiful and tough fibre can be prepared from the bark, so it may be useful one day.

Amongst the Euphorbiaceæ an order which is more characteristic of India than of Australia, but which is well represented in our tropical latitudes as well as in India, we have many weeds. We have a very large number of indigenous members of *Phyllanthus* but *Euphorbia* is not one of ours. The pretty little *Euphorbia peplus*, Linn., has made several attempts to establish itself here as a garden weed, but without success. But a more pretentious member of the same order has not found any difficulty in spreading all over the country. This is *Ricinus communis*, Linn., or the castor-oil plant. It has a large number of varieties. Some are really superb, notably those which grow along the side of the South-Western railway on the main range between Brisbane and Toowoomba.

The common European nettle *Urtica urens*,, Linn., has obtained a firm footing, and has been falsely accused of poisoning sheep and cattle. This undeserved slander, it has had to bear, in common with many a harmless plant in Queensland. It is very common for stock owners, when they lose any of their sheep or cattle by disease, drought, climate, or other causes, to visit the misfortune on the innocent heads of some of the most useful plants years back in a waterhole near Brisbane); *Cuscuta europea*, Linn. (common dodder on lucerne in cultivation); and the pretty scarlet *Salvia coccinea*, Linn.

In many cases of course, the evidence of introduction is founded on little more than conjecture. Some that are called so are not excluded from our native population on evidence that would exclude them in a court of justice; but their cause must be pleaded on another occasion. It may be sufficient to say now that it is doubtful whether some or all of the following 13 species may not really be indigenous:—*Silene gallica*, Linn.; *Stellaria media*, Linn.; *Xanthium spinosum*, Linn.; *Bidens pilosa*, Linn., *Galinsoga parviflora*, Cav.; *Tagetes glandulifera*, Schranck; *Physalis peruviana* Linn.; *Rumex acetosella*, Linn.; *Chenopodium ambrosioides*, Linn; *Sisyrinchium micranthum*, Cav.; *Cynodon dactylon*, Pers.; *Holcus lanatus*, Linn.; *Lipocarpha argentea*, R. Brown. The last is a beautiful sedge, and has only been gathered in one locality by myself. Bentham, in the "Australiensis," (vol. vii., p. 337) seems to doubt its being indigenous. As far as my observations go, I am convinced that it is not introduced, but is as purely indigenous here as in any other of its habitats.

Amongst the Gramineæ or grasses, it is difficult to say which are and which are not introduced in every case, but I think we may safely say that *Lolium temulentum* Linn.; *Ceratochloa unioloides*, De Candolle; *Poa annua*, Linn.; and *Panicum maximum*, Linn., are not natives of Queensland. Something might be added about the qualities of the Drunkard's Rye grass, or as I suppose we should say the Rye grass which makes people drunk, as that was the intention of Linnæus, in calling this weed Lolium temulentum. It is better known to us as wild Darnel, and I believe its poisonous qualities have been made out. Fortunately it is not common, but wherever noticed it should most certainly be extirpated.

These few notes are far from complete, and I have jotted them down to a great extent from memory. It should be observed that

I have taken no notice of such weeds as *Polygonum aviculare*, L.; *Erigeron canadensis*, L.; and *E. linifolius*, some species of *Apium*, *Alternanthera*, &c., as my object has rather been to point out those naturalized plants which especially distinguish the colony.

It will doubtless be a matter of suprise that, in a colony like Queensland, where so much cultivation is carried on, and in such an extensive range of plants, more than the above are not naturalized amongst us.

ON A NEW SPECIES OF FERN, ASPLENIUM PRENTICEI.

BY F. M. BAILEY, ESQ., F.L.S., HON. MEM. Linn. Soc. N.S.W.

I beg to bring before the Society and thus to introduce to science a species of *Asplenium* which I do not think has ever been the elegant *Trichomanes peltatum*, Baker. I found amongst the brush another small species of *Trichomanes* which is probably new. The specimens I collected were forwarded to the Queensland Acclimatization Society, Bowen Park, where unfortunately as the specimens were small, they were lost in unpacking.

The species resembles *T. parvulum*, Poir, but instead of growing in a thick mass, it runs up the trunks of trees in straight lines. The rhizome is quite filiform and the fronds are at a distance of one or two inches, like some of our mosses. It is to be hoped that this truly elegant fern may not be lost sight of.

ASPLENIUM (EUASPLENIUM) PRENTICEI. N. S.

Caudex erectus, 1′ *altus,* 2″ *latus, caulibus stipitum squamisque atratis imbricatus. Stipes* 6″ - 12″ *longus, fuscus, basim versus squamosus squamis nigris, lanceolatis, serratis, interdum fere filiformibus. Frondes* 1′ *v.* 1′ 6″, *glabræ. Pinnæ* 2″ *v.* 3″, *petiolatæ, oblongo-lanceolatæ, serratæ, basi supra truncata, infra obliqua. Pinna ultima* 5″ *v.* 6″, *aliquando profunde lobata. Venæ semel furcatæ, ad marginem terminatæ, sori supra furculam superiorem siti; venulæ prope apicem haud soriferæ. Indusium latum, sat firmum, fulvum, sæpe falcatum. Rachis aliquando paucis squamulis setaceis hispidula.*

Per valles umbrosissimas irriguas Trinity Bay Ranges, dispersa, Habitu Lomariæ discolori similis. Nomen imposui viri doctissimi Caroli Prentice, M.D. magna industria ad cognitionem filicum Australiæ auxilianti.

Caudex erect about 1 ft. high, 2 in. thick, covered with the black bases of old stipites mixed with black scales. Stipites 6 to 12 in. long, dark, the base covered with black lanceolate, serrate, sometimes almost filiform scales. Frond 1 to 1½ ft. long, glabrous or with a few setaceous scales on the rachis. Pinnæ 2 to 3 in. long, petiolate, oblong-lanceolate, serrate, the upper base truncate the lower oblique, terminal pinna 5 to 6 in. long, sometimes deeply lobed, veins once forked, patent, terminating at the margin; the upper veinlet of each fork, except those near the apex, soriferous. Indusium broad, firm, brown, often somewhat falcate.

This very distinct species of Asplenium occurs in the deep gullies of the Trinity Bay Ranges. In habit it resembles *Lomaria discolor*, Wilde. This specific name is in honor of Dr. Chas. Prentice, F.L.S., who has greatly assisted in working up the ferns of Queensland.

ON THE AUSTRALIAN SPECIES OF PENÆUS, IN THE MACLEAY MUSEUM, SYDNEY.

BY WILLIAM A. HASWELL, M.A., B.Sc.

1. Penæus canaliculatus, *M. Edw. (Hist. Nat. Crust.* Vol. ii. p. 414).

Specimens of this well-marked species are in the Macleay Museum from Port Jackson, where it is very common, Port Stephens, and Port Essington.

intervals between which increase slightly in length distally—the most anterior being separated by a longer interval from the apex of the rostrum than from its successor; rostrum continued backwards into a non-sulcated carina, which, however, loses itself before attaining the posterior border of the carapace; on each side of the rostrum a groove or sulcus, which, commencing as an obscure linear depression near the tip of the rostrum, increases in breadth and depth posteriorly, but becomes lost about the middle of the carapace. Supraorbital spine absent; hepatic and antennary spines present; gastro-hepatic sulcus very deep; cervical groove obsolete posteriorly. Rami of antennules short; the internal scarcely equalling in length the two last segments of the peduncle; the external somewhat longer. Grinding surface of mandibles slightly excavate, with two obscure teeth; palp biarticulate, setiferous, phylloid, its apex blunt, and its outer border concave in its distal half, nearly straight proximally, its inner border uniformly convex. First maxillæ with the anterior division of the endopodite slender and pointed; the others broader, truncate, armed on their inner border with a series of spines. Second maxillæ with the exopodial portion of the scaphognathite much longer than the epipodial, and strongly incurved anteriorly; endopodite having the most internal of its phylloid divisions larger than the others. First maxillipedes with the inner division of the endopodite rudimentary; the squamiform plate of the exopodite armed with a pointed process near the proximal end of its outer border; the epipodite sub-triangular, with the posterior angle rounded. Second maxillipedes with the endopodite, when extended, shorter than the exopodite. Outer maxillipedes hairy, the palp short, hardly reaching to the distal end of the second joint of the endopodite. Ambulatory legs increasing in length to the third, which is nearly as long as the carapace and rostrum; the fourth pair much shorter than the third, but equal to the second; the fifth intermediate in length between the second and third. First pair with a long acute spine on the under surface of the second joint, and another on the under surface of the third joint; the second pair with a single spine on the second joint. Abdomen with well-marked carina on the fourth, fifth and sixth segments; the first, second, fourth and fifth segments with a notch on each side posteriorly. Seventh segment strongly grooved on the middle dorsal line, its apex spiniform, its lateral margin devoid of spines. Appendages of sixth segment rounded distally, the inner slightly more pointed.

Length of largest specimen 9 inches.

Hab. Port Jackson; Port Darwin. (*Alex. Morton*).

This is the common edible prawn of Sydney, and Newcastle, etc.

5. Penæus Macleayi sp. nov.

Rostrum extending nearly as far forward as the end of the antennary scale, very slender and styliform near the apex, which near the extremity with a strong spine, with two weaker spines immediately anterior to it.

Length 5 inches.

Hab. Port Jackson.

6. Penæus granulosus, sp. nov.

Rostrum rather short, not reaching so far as the end of the antennary scale, very slightly recurved, with ten small teeth above, situated close together anteriorly—the intervals between consecutive teeth increasing progressively from before backwards, the last separated from the penultimate by a wide interval; under surface toothless, with a fringe of very long cilia. Rostrum continued backwards into a blunt carina, which is non-sulcate, and reaches to the posterior margin of the carapace ; no lateral sulci. Carapace granular. Supra-orbital spine present, small ; antennary and hepatic spines present; gastro-hepatic sulcus almost obsolete. Eyes large. Antennules with the flagella sub-equal, nearly equal in length to the peduncle. External maxillipedes hairy, the first three joints of the endopodite broad, compressed; flagellum reaching hardly as far as the distal end of the second joint. Ambulatory limbs progressively increasing in length to the third pair; fourth shorter than, fifth equal to the third pair. First and second pairs both unispinous, third non-spinous. Surface of abdomen minutely granular; third, fourth, fifth and sixth segments with a mesial dorsal carina, which ends in a small spine on the sixth segment. First, second, fourth and fifth rings with a lateral notch on their posterior border; those on the first and second segments shallow and open, those on the fourth and fifth rather deeper. Seventh segment mesially grooved; its apex acute, but not developed into a spine ; its lateral margin with a single, weak spine.

The above is the description of the adult female. From the same localities are a number of small male specimens, which seen to be the males of this species; they differ from the females in the following points;—(1) the rostrum is a shade higher and more compressed; (2) the peduncles of the antennae are rather shorter; (3) the anterior pair of legs are bispinous; (4) there is no marked dorsal carina on the carapace.

Length of female 3½ inches; of male 2½ inches.

Hab. Darnley Island; Cape Grenville; Cape York (Chevert Exped.).

7. Penæus Mastersii, sp. nov.

Rostrum reaching nearly as far as the end of the antennary scale, slender, nearly straight; armed above with eight or nine teeth, of which the last is separated by a wide interval from the penultimate; unarmed below; continued back into a non-sulcate carina which does not reach to the posterior margin. A slight lateral groove at the side of the rostrum, not continued backwards. Carapace smooth; supra-orbital spine rudimentary; hepatic and

8. Penæus Novae-Guineæ, sp. nov.

Rostrum rather short, not quite reaching to the end of the antennary scale; straight, sub-acute, armed above with six small teeth; unarmed below. No marked dosal carina, nor longitudinal sulci on the carapace. Surface of carapace pilose; gastro-hepatic sulcus moderately deep; hepatic and supra-orbital spines absent. Eyes large. Flagella of antennules and antennae (wanting). External maxillipedes hairy, palp extending to the distal end of the second joint. Anterior pair of ambulatory limbs (wanting). Third pair longer than second; fourth shorter than third; fifth about equalling the latter in length. Under surfaces of second and third pairs devoid of spines. Abdomen pilose; a mesial dorsal carina on the second, third, fourth, fifth and sixth segments; no spine in the middle of the posterior border of the sixth. A deep lateral notch on the posterior border of the fourth and fifth segments. Last abdominal segment with a narrow mesial groove; its apex spiniform; its lateral border armed with three spines.

Length 2¼ inches.

A single, imperfect, male specimen of this species, from Katow, New Guinea, is in the Chevert collection.

9. Penæus Palmensis, sp. nov.

Rostrum short, hardly exceeding the eyes in length, strongly reflexed from the base, straight in the rest of its extent, sub-acute, with eight teeth above—the last separated from the penultimate by a wide interval; unarmed below. No dorsal carina on the carapace. Surface of carapace pilose; gastro-hepatic sulcus shallow; orbital spine absent; antennary and hepatic spines present. Flagella of antennules very short, not much exceeding in length the last segment of the peduncle. Palp of external maxillipedes exceedingly short and slender. Proportionate length of ambulatory limbs as in preceding species; a spine on the under surface of the second joint of the first and second pairs. Abdomen with the second to the sixth segments carinated. Posterior borders of the first and second with a shallow excavation on each side; those of the fourth and fifth with deep notches. No spines in the middle of the posterior border of the sixth segment. Last segment with a narrow mesial groove; its apex spiniform; its lateral margins armed with several spines.

Length about 1½ inches.

Hab. Palm Is. (Chevert Exped.).

CONTRIBUTIONS TO A MONOGRAPH OF AUSTRALIAN LEUCOSIIDÆ.

BY WILLIAM A. HASWELL, M.A., B.Sc.

In Bell's Monograph of the Leucosiidæ (*Trans. Linn. Soc., Vol.* 21., *p.* 277, *et seq.*) seven species are mentioned as inhabiting the Australian Coast. A recent paper by Mr. E. J. Miers of the British Museum (*Trans. Linn. Soc.*, 1877, *p.* 235), on this interesting tridentato; sinu thoracico nullo; sterno in utroque sexu antice granulato."

Hab. Coasts of Australia (Brit. Mus.).

Sp. 3. Leucosia ocellata, *Bell.* (*l. c.*, p. 289, pl. 31. fig. 1). "Testa rhomboidali; fronte tridentato; regione gastrica maculis quatuor parvis rubris signata, quarum binæ anteriores ocellatæ."

Hab. Eastern Shores of Australia, (Brit. Mus.); Keppel Bay, (Chevert Exped.).

Sp. 4. Leucosia Whitei, *Bell.* (*l.c.*, p. 289, pl. 31. fig. 2). "Testa rhomboidea, fronte producto, minute tridentato; regionibus hepatica et branchiali granulis tribus vel quatuor; brachiis tomentosis, tuberculis magnis omnino instructis."

When Bell wrote his monograph, he had only seen a single specimen of this species (a female), found by Macgillivray on the eastern coast of Australia. The Chevert Expedition obtained specimens from Princess Charlotte Bay, Cape Grenville and Brook Island. The male abdomem has its compound part, which includes all the joints except the first and seventh, divided into two segments, of which the proximal is rather broad and prominent, and is marked posteriorly by a short mesial sulcus, while the distal is broad at the base, decreasing gradually in breadth towards its rounded distal extremity.

Sp. 5. Leucosia reticulata, *Miers*, (*Trans. Linn. Soc.*, 1877, p. 237, pl. 38, figs. 13—15). Testa orbiculari, laevi, lineis viridibus reticulatis ornata; fronte brevissimo, integro; sinu thoracico brevi, haud definito; regione hepatica granulis paucis rubris signata.

Hab. Shark's Bay, Western Australia. (Brit. Mus.).

A specimen from Port Darwin in the Chevert collection is probably referable to this species; it agrees very closely with the description and figures in the form of the carapace and of the thoracic sinus, the disposition of the tubercles on the arms, etc.;

it differs however, in the marking of the carapace, which, in place of being covered with reticulating lines, is onamented with a single, thick, somewhat S-shaped green line on the lateral parts of the branchial region, and four large green spots nearer the middle line. Should the examination of further specimens shew those points of difference to be constant, the name of *L. viridimaculata* may be given to this variety.

Sp. 6. Leucosia Perryi, *Miers*, *(l c.*, p. 238, pl. 38, figs. 19—21). Testa sub-depressa; fronte tridentato; sinu thoracico nullo; brachiis ad basin dense tuberculatis; carpo manuque lævibus.

Hab. Shark's Bay, Western Australia. (Brit. Mus.).

Sp. 7. Leucosia pubescens, *Miers*, *(l. c.*, p. 238, pl. 38, figs. 22—24). Testa convexa, lævi, polita; regionibus hepaticis concavis, lævibus; fronte tridentato, supra plano; sinu thoracico margine marking of the carapace; but also in the possession of a line of tubercles on the inner border of the hand. The carapace is of a dull ashy-grey tint, which becomes blueish on the front, and on the general surface of the arms. There are a pair of circles on the branchial regions, as in *L. pulcherrima* and various other species, but the lines are extremely fine; the anterior trilobate pattern, which is also very faint, has the three lobes drawn out from one another, so as to leave a considerable central space, and the outer lobe is not regularly rounded, as in *L. pulcherrima* and the species next to be described. There are three white spots within the trilobate figure, the most anterior being very small.

Sp. 10. Leucosia splendida, *sp. nov.* (Plate 5. fig. 1). Testa lævi, convexa, antice sparsim punctata, figuris trifloliaceis binis distinctis, binisque circularibus ornata, manu ordine inconspicuo tuberculorum; sinu thoracico profundo, angusto, antice bene definito.

This beautiful species is very nearly allied to *L. pulcherrima*; but differs from it in the marking of the carapace, as well as in the possession of a line of very small tubercles on the inner border of the band. The two trefoil markings on the carapace do not coalesce at any point; and the angles between the lobes are more pointed; the circular figures are more remote from one another and from the trefoil marks, and, together with the latter, are much smaller than in the species described by Mr. Miers. There is a very close agreement in all other points.

Length 8 lines; breadth 7 lines.

Hab. Port Jackson (Macleay Museum).

Sp. 11. Leucosia Chevertii, *sp. nov.* (Plate 5. fig. 2.) Testa rhomboidea, fronte producto, paeno integro; regionibus hepaticis convexis, lævibus; brachiis ad basin tomentosis, tuberculis magnis omnino instructis.

Carapace rhomboidal, polished, with a rounded elevation on the hepatic region, which is free from granulations. Front nearly entire, but obscurely trilobed. Thoracic sinus, as in *L. Whitei*, deep, strongly waved above, with a granulated inferior margin. The postero-lateral margin, as in that species, fringed with a line of hair. Maxillipedes and limbs as in *L. Whitei*, except that the wrist has fewer granules. Abdomen (male) broadly triangular, with a deep median sulcus at its proximal end. Colour of the carapace very light brown, with a blush of dark brown on each hepatic region, and a lighter brown mark on the gastric and genital regions; the tubercles of the arms pink, and the fingers red at the base.

Length and breadth about 4½ lines.

Nearly allied to *L. Whitei*, Bell; but distinguished by the form of the front, and the absence of granules on the hepatic region.

Hab. Cape Grenville, and Darnley Id. (Chevert Exped.)

yellowish-grey, with yellow markings on the base of the fingers, and on the ambulatory legs.

Length 10½ lines; breadth 9 lines.

Hab. Darnley Island (Chevert Exped.).

Sp. 13. Leucosia moresbiensis, *sp. nov.* Testa suborbiculari, antice depresso-punctata; fronte tridentato; sinu thoracico angustissimo, tuberculis complanatis tribus infra ornato; manibus utrinque carinatis, extrorsum lævibus, introrsum ordine inconspicuo granulorum; digitis acuminatis, incurvis.

Carapace suborbicular, minutely punctate anteriorly. Rostrum rather short, armed anteriorly with three minute teeth, of which the central one is much the largest. Thoracic sinus very narrow, bordered below by a row of three large compressed tubercles, continued backwards into a row of very minute granules. External maxillipedes with the proximal articulations dilated, and bordered with a close fringe of hairs. Anterior ambulatory limbs somewhat longer than the body; arm with its upper surface pretty closely tuberculated except at its distal end; wrist armed with a single row of minute granules; hand carinated internally and externally, the internal carina granulated; fingers slender, acuminate, the points incurved, their inner border armed with minute teeth in rather less than the distal half. Abdomen (female) ovoid, strongly convex. Colour deep brown above, lighter posteriorly; light brown below.

Length 9 lines; breadth 8.

Hab. Port Moresby, New Guinea. (Australian Museum.)

This form more nearly resembles *L. obscura* of Bell than any other described species; differs from it, however, in the form of the thoracic sinus, the small size of the granules on the postero-lateral and posterior borders of the carapace, in the possession of a row of granules on the inner border of the hand, and in the armature of the fingers.

GENUS II.—MYRA, Leach.

Sp. 1. **Myra carinata,** *Bell (l. c.*, p. 297, pl. 32, fig. 3). "Testa ovata, minute granulata, carinata, spina postica media lateralibus ter quaterve longiore, lateralibus conicis, acutis."

A specimen from Cape Grenville in the Chevert collection seems to be referable to this species. The abdomen (male) is broadly lanceolate, with its borders slightly concave.*

Sp. 2. **Myra mammillaris,** *Bell, (l. c.*, p. 298, pl. 32, fig. 5). "Testa ovata glabra, tuberculis parvis elevatis sparsim instructa; dentibus posticis bevissimis, rotundatis."

Hab. Shores of Australia. (Brit. Mus.)

Sp. 3. **Myra affinis,** *Bell, (l. c.*, p. 296, pl. 32, fig. 2). "Testa ovato-globosa, spinis posticis brevibus, subæqualibus; pedibus anticis thorace vix bis longioribus; manu digitis tertia parte cluster of granules; pterygostomial regions very acutely angulated. Median posterior spine little longer than the lateral, conical, pointed, and sharply recurved at the apex; lateral spines flattened, triangular. Front entire, slightly depressed mesially. Arm covered with large granules throughout its whole extent: wrist, hand and fingers covered with fine granulations; fingers about half the length of the hand, slightly ridged longitudinally. External maxillipedes and sternum covered with minute granulations. Abdomen of male triangular, granulated externally, smooth mesially, its borders concave throughout the greater part of their extent, a prominent tubercle on the penultimate segment. Abdomen of female granulated, broadly ovoid, with well-marked longitudinal sulci, and a tooth on the penultimate segment.

Carapace marked with variously-disposed blotches of orange; the proximal half of the upper surface of the arm, and the articulations of the ambulatory limbs marked with the same colour, of which also two circular spots occur on the upper surface of the third joint of each ambulatory limb.

Length 1 inch; breadth 10 lines.

This species—of which the young specimens do not differ markedly from the adult—is very near that described and figured by Mr. Miers (*l. c.*, pl. 38, figs. 25—27.) as probably the young of *M. mammillaris*, Bell; but dffers from it in the form of the posterior median spine, the prominence of the intestinal region, and the shape of the adomen of the male.* From *M. mammillaris* it differs widely in the form of the front and of the posterior spines, and the greater shortness and stoutness of the anterior limbs, as well as in the possession of a carina, and the stronger angulation of the pterygostomial region.

Hab. Sue, Darnley and Palm Islands; Cape Grenville (Chevert Exped.).

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* The carapace is more regularly tapering behind than it appears in the figure.

Sp. 5. **Myra Darnleyensis**, *sp. nov.* (Plate 5, fig. 4). Testa ovato-globosa ; fronte pæne integro, lobis obscuris ; spinis posticis latis, compressis ; digitis manui longitudine superantibus.

Carapace granular, non-carinated ; a large tubercle on each hepatic ridge, The front deeply grooved mesially, obscurely four-lobed. The posterior spines large, broad, compressed, subtriangular—the middle one slightly larger than the others. Maxillipedes and sternum covered with minute granulations. Fingers slightly exceeding the hand in length, striated longitudinally, meeting by the whole length of their inner edges, which are minutely toothed. Ambulatory limbs slender. Abdomen (male) sparsely granulated ; with a small tubercle on the penultimate segment.

A few ill-defined light yellow marks on the carapace ; two light red bands on the upper surface of the arm ; and one of the same colour on the distal surface of the hand.

[illegible]

Length 1½ inch ; breadth 1⅙th inch.*

Hab. Darnley Id. (Chevert Exped.).

GENUS IV.—PHILYRA, Leach.

Sp. 1. Philyra lævis, *Bell*, (*l. c.*, p. 300, pl. 32, fig. 7). "Testa, corpore, pedibus omnino lævibus."

Hab. Port Adelaide (Brit. Mus.) ; Hobson's Bay ; Tasmania ; King George's Sound ; (Macleay Museum).

Sp. 2. Philyra porcellana, *Fabr.* (*Vide* Milne-Edwards, *Hist. Nat. Crust.*, ii. p. 133). "Testa globosa, minute punctata, fronte epistomate parum breviori ; margine granulato ; brachiis cylindricis, tuberculatis ; manibus inflatis, lævibus."

Hab. Swan River, (Brit. Mus.).

GENUS V.—PHLYXIA, Bell.

Sp. 1. Phlyxia crassipes, *Bell*, (*l. c.*, p. 304, pl. 34, fig. 2). "Testa subcarinata, rostro quadrato, quadridentato ; pedibus anticis testa plus quam duplo longioribus ; brachiis rotundis, medio tumescentibus."

Hab. Eastern Shores of Australia (Brit. Mus.) Port Jackson, etc. (Macleay Mus.).

This species is extremely common in Port Jackson.

Sp. 2. Phlyxia lambriformis, *Bell*, (*l. c.*, p. 309, pl. 34, fig. 1). "Testa carinata, rostro triangulari, emarginato, margine latero-anteriore inciso, latero-posteriore acute carinato."

Hab. Eastern Shores of Australia (Brit. Mus.) Princess Charlotte Bay (Chevert Exp.).

Sp. 3. Phlyxia quadrata, *A. Milne-Edwards*, (*Journal des Museum Godeffroy*, Band. I., Heft. IV., p. 86). Testa rhomboidea, medio elevata, regionibus hepaticis gastricis multum humilioribus ;

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* N.B.—The carina is made to appear too prominent in the figure. It consists merely of an incomplete line of very small granules.

fronte producto, emarginato; margine postico tuberculis binis; corpore pedibusque granulis minutissimis, ad marginem lateralem majoribus.

Hab. Bass's Strts.

Sp. 4. Phlyxia erosa, *A. Milne-Edwards, (l. c.,* I. p. 86). Testa elongata, antice coarctata, postice tuberculata, antice vix lævi; regione cardiaca elevata; marginibus lateralibus inermibus; fronte producto, lobis duobus acutis.

Hab. Bass's Strts.

Sp. 5. Phlyxia orbicularis, *sp. nov.* (Plate 6, fig. 2). Testa orbiculari, carinata, minute granulata, margine laterali dentibus quinque parvis armato.

Carapace orbicular, moderately carinated, beset throughout with minute granules; median posterior tooth small and sharp, the

Carapace rhomboidal, closely granulated, the posterior border armed with two triangular compressed teeth; cardiac region elevated to form a prominent pyramidal eminence surrounded by a narrow fissure, continuous with which anteriorly is a pair of similar fissures separating the genital region from the branchials. Genital region armed with a short, blunt spine; a pair of similar spines on the posterior half of the gastric region, and one on each branchial region; on each hepatic region a triangulr tooth, bounded behind by a narrow fissure similar to that which surrounds the intestinal eminence. Front moderately prominent, bidentate. Sternum and external maxillipedes covered with close-set granules, which become elongated into spinules towards the anterior extremities of the latter. Limbs covered all over with similar granules. Arm obscurely triquetrous; hand ridged above and internally; fingers acuminate, meeting when closed by the entire extent of their finely-toothed inner margins. Abdomen of male marked on its compound segment by a protuberance on each side. Female abdomen with the intersegmental lines on the compound segment distinct. Colour pale reddish-grey, with reddish-orange spots, which are arranged as follows:—one on each side of the front; one on the external maxillipedes and pterygostomial region, one on the arm, one on the wrist, and one on the hand; and one on each of the third, fourth and fifth articulations of the ambulatory limbs.

Length and breadth about 3 lines.

Hab. In deep water outside Sydney Heads; dredged by H. M. S. "Challenger."

Sp. 7. Phlyxia Ramsayi, *sp. nov.* Testa quadrata, granulosa, fronte lobis quatuor; regione gastrica tuberculis elongatis tribus, regione cardiaca tumidissima; regionibus epibranchialibus depressis; mesobranchialibus elevatis.

Carapace nearly square, covered, together with the limbs, with close-set granules. Front with a slight median fissure, on each side of which are two rounded lobes. Gastric region with one mesial longitudinal, and two lateral oblique ridges, the latter of which stop short about the posterior boundary of the region, while the former becomes dilated posteriorly and becomes merged in the prominent pointed eminence occupying the cardiac region. Hepatic regions much depressed. Epibranchial regions depressed; meso and metabranchial slightly dilated, with two tubercular elevations—the anterior elongated and double, the posterior conical. Anterior limbs about twice as long as the carapace; hand compressed, and keeled above; fingers slightly curved, pointed, strongly ridged, and armed with rounded teeth. Ambulatory limbs about equal to the carapace in length; propodos dorsally carinate. Colour light red.

Length and breadth 3½ lines.

Hab. Port Jackson; (Australian Museum).

Genus VIII.—? Lithadia, Bell.

Sp. 1. ? Lithadia sculpta, *sp. nov.* (Plate 6, fig. 5). Testa regionibus gibbosis sulcis profundis intersecta; margine laterali utrinque dentibus quatuor; dentibus posticis nullis; fronte lato, pæne integro, sub-emarginato.

Carapace broader than long, deeply sulcated. Sulci consisting of a circumferential sulcus running round the whole of the carapace, and two which are continuous with it and with one another close behind the rostrum, and diverge as they pass backwards and outwards to include between them an elongated mesial elevation, pointed in front, and rounded posteriorly, which is divided into two by a smaller transverse sulcus.* The elevations which these sulci circumscribe are rough, dilated, rounded and granular, but do not develope pointed projections or teeth. Lateral borders with four rounded teeth, of which the second is bifurcate. Front broad, and slightly emarginate anteriorly, granular above; a low median ridge, passing back from it, crosses the circumferential sulcus and becomes continuous with the mesial elevation. Sternum coarsely tubercular; external maxillipedes closely resembling those of *L. cumingii* as figured in Bell's Monograph. Anterior limbs as long as the carapace; arm coarsely granular; granules becoming elongated on the upper surface of the wrist and hand into irregularly-placed conical teeth; fingers marked by longitudinal rows of granules, and with acute and incurved points, which cross one another when the hand is closed. Ambulatory legs covered with coarse granulations, which take the form of short spines on the fourth and fifth joints; tarsi hairy. Abdomen of female granulated; the intersegmental lines all distinct; a longituninal sulcus on each side of the middle line. Colour pale brown with ill-defined reddish spots; fingers crossed near their tips by a transverse red stripe.

The sulcated carapace of this species together with the form of the foot-jaws, etc., seem to bring it within the genus *Lithadia* of

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* These sulci are hardly so broad as they appear in the figure.

Bell; the proportions, however, of the transverse to the longitudinal diameter of the carapace bring it nearer the genus *Oreophorus*, between which and *Lithadia* it may be regarded as forming a connecting link.

Length about 4 lines; breadth about 5.

Hab. Fitzroy Is. (Chevert Eped.)

GENUS IX.—ARCANIA, Leach.

Sp. 1. Arcania gracilipes, *Bell, (l. c.,* p. 310, pl. 34, fig. 9). "Testa granulosa, tuberculis quinedecim supra, et tribus ad marginem posteriorem instructa; pedibus anticis tenuissimis."

Hab. Darnley Id. (Chevert Exped.)

Sp. 2. Arcania novem-spinosa, *Adams and White*, (*Crust. of the Voyage of the Samarang*, p. 56, t. 13, f. 1). "Thorace lævi, Bell, (the nearest ally of this species) being absent;* lateral pair much the longest, hardly appreciably flattened and slightly curved upwards; covered, in common with the others, with granules like those on the surface of the carapace. Front prominent, emarginate. Anterior limbs more than twice as long as the carapace; arm slender and tuberculated; hand smooth, slightly swollen at base, and tapering towards the fingers, which are very slender, and armed on their inner margins with fine denticles and a few larger triangular teeth. Posterior limbs slender, cylindrical and smooth. Abdomen (female) ovoid, granulated; the compound part with no trace of intersegmental lines, but traversed by well-marked longitudinal sulci. Colour nearly white, with a blush of red over the lateral parts of the carapace and the lateral spines; and a band of the same colour on the upper surface of the arm.

Length 5 lines; breadth, including lateral spines, 8½ lines.

Hab. Darnley Id. (Chevert Exped.)

GENUS X.—IXA, Leach.

Sp. 1. Ixa inermis, *Leach,* (*Zool. Misc.* t. III, p. 26, pl. 129, fig. 1). Testa regionibus sulcis minime-profundis separatis, margine postico tuberculis binis, processibus lateralibus inermibus.

Hab. Cape Grenville. (Chevert Exped.)

GENUS XI.—ACTÆOMORPHA, Miers.

Char. gen. Testa convexa, marginibus ut in cancroideis arcuatis; fronte fossaque buccali latis.

Sp. unica. Actæomorpha erosa, *Miers,* (*Journ. Linn. Soc.* 1876. p. 183, pl. 14). Testa granulis fossisque parvis omnino signata, tuberculis quinque instructa; pedibus anticis robustis, manu carpo vix longiori; pedibus posticis brevibus, compressis.

Hab. Port Curtis.

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* The posterior spines are rather closer together than they appear in the figure.

GENUS XII.—PERSEPHONA, Leach.

Sp. 1. Persephona tuberculosa, *A. Milne-Edwards (Journal des Museum Godeffroy, Band* I., p. 86). Testa quadrata, tumida, granulis complanatis, apud margines majoribus, omnino instructa; regione gastrica tuberculis tribus; regione cardiaca tuberculo magno, fissura angustissima circumscripto; margine postico tuberculis duobus; pedibus anticis longis, granulatis.

Hab. Bass's Strts.

EXPLANATION OF PLATES 5. AND 6.

Plate 5.

Fig. 1.—*Leucosia splendida*; with female abdomen, and lateral view of carapace.

,, 2.—*Leucosia Chevertii*; with male abdomen.

,, 3.—*Myra australis*; with male, and female abdomen, and

Among the spirit specimens I find fourteen species of Fishes, and as but little is known or has been written of the Natural History of this group of islands, I propose in this paper to make a few observations on them, both as regards their specific characters and geographical distribution. I may mention that Dr. Gunther has, in "Brenchley's Voyage of the Curacoa," given the names of 68 species of Fishes, said to have been found at the Solomon Islands, and it is very remarkable that not one of them is to be found in the small collection now before me for description.

1. MESOPRION AUREOVITTATUS, n. sp.

D. 10/12 A. 3/8 L. lat. 45.

Height of body one-fourth of the total length, length of head slightly more than the height of the body. Eyes large, distant from the snout about one diameter of the orbit, and rather less than one diameter apart. The head is flat between the eyes, and slopes gradually to the snout; the maxillary extends to nearly opposite the middle of the eye; the lower jaw is slightly longer than the upper, the outer row of teeth in the lower jaw are rather large, acute, and number about six on each side, in the upper jaw there are only two canines; vomerine teeth on a strong subtriangular protuberance. Præorbital without scales, rough and covered with pores. Cheek covered with small scales, præoperculum with seven or eight small equidistant teeth at the angle which is rounded, and with a very distinct elongate emargination just above the angle. Spines of the first dorsal fin slender and longer than in *M. Johnius*, the fifth and sixth being nearly half the height of the body. The pectoral fins reach the anus. The tail is broad, expanding, and slightly emarginate. The colour above the lateral line is dark and bluish, below it silvery with three golden longitudinal stripes; a large black blotch occupies a space on the lateral line from opposite the eighth dorsal spine, to the sixth dorsal ray. The fins are yellowish, a dark bar appears to cross the caudal near the apex, but is distinct only on the lower lobe. Total length about eight inches.

I have only one specimen of this Fish, but I have seen another in the possession of Mr. Ramsay, of the Australian Museum. It is said to be from fresh water, and if so, is probably a species peculiar to the Solomon group. Judging from the description, the *M. uninotatus* c. and v. from Brazil is the species it most resembles.

2. THERAPON SERVUS, c. and v.

Gunth. Cat. Fish., Brit. Mus., Vol. I., p. 278.

The specimens of this widely distributed Fish in the Solomon Islands collection were so much beyond the usual size, that I was at first disposed to fancy that I had got hold of Hombr. and

Gunther's *P. grande* are given by Dr. Alleyne and myself in the Proceedings above referred to.

6. POLYNEMUS PLEBEJUS, Gm. L.

Gunth. Cat. Fish., Brit. Mus., Vol. II., p. 329.

There was only one specimen of this Fish in the collection, and that fell to my lot. It is, however, a species of apparently universal distribution in the Indian and Pacific Oceans.

7. CARANX CALLA, C. and V.

Gunth. Cat. Fish. Brit. Mus., Vol. II., p. 433.

I am not quite confident that I am right in assigning the specimen before me to this species. My only example is small and probably very young, but upon the whole it agrees well with the description of *C. calla,* which seems to be a very widely distributed species.

8. PSETTUS ARGENTEUS, L.

Gunth. Cat. Fish., Brit. Mus., Vol. II., p. 487.

9. EQUULA EDENTULA, Bloch.

Gunth. Cat. Fish., Brit. Mus., Vol. II., p. 498.

The collection contained two fine specimens of this Fish. Like the preceding species it seems to have a very wide distribution throughout the Indian, Malayan, and Polynesian Seas.

10. ELEOTRIS OPHIOCEPHALUS, C. and V.

Gunth. Cat. Fish., Brit. Mus., Vol. III., p. 107.

This Fish probably goes into fresh water. It is mentioned by Dr. Gunther as being found in the rivers of Seychelles and New Ireland, and in the seas of Penang, the East Indian Archipelago, and the Philippines. I believe that the Fish named by me *Agonostoma Darwiniense* (Proc. Linn. Soc., N. S. Wales, Vol. II., p. 360) properly belongs to this group of the genus *Eleotris.*

11. ACANTHURUS TRIOSTEGUS, Bl.

Gunth. Cat. Fish., Brit. Mus., Vol. III., p. 327.

One small specimen in the collection of the Australian Museum.

12. GLYPHIDODON SEPTEMFASCIATUS.

Gunth. Cat. Fish., Brit. Mus., Vol. IV., p. 40.

I have one specimen of this Fish, about five inches in length. Dr. Gunther says it is found "from Mauritius to the Philippine Islands and coasts of China." To this may now be added the Solomon Islands.

13. EXOCOCTUS MENTO, C. and V.

Gunth. Cat. Fish., Brit. Mus., Vol. VI., p. 281.

One specimen about six inches in length

NOTES ON THE ZOOLOGY OF THE SOLOMON ISLANDS.

By E. P. Ramsay, F.L.S., &c., &c.

Part I.—AVES.

Some months ago Mr. James Cockerell accompanied Captain Brodie of the Schooner "Ariel" to the Solomon Islands, where through the liberality of Capt. Brodie, he was enabled to make a very fine collection of the fauna of those Islands, and, although only visiting three "Stations," collected about 50 mammals and about 350 skins of birds. Having had an opportunity of examining the whole of these collections, I have made a few notes on the subject which may be of interest to ornithologists.

One of the principle features in the collection is the large number of that beautiful and hitherto rare parrot, *Lorius cardinalis*, of which there is a very large series. The rare *Halcyon leucopygia*, one sex only of which was previously known, is also well represented; I was glad to find also a beautiful hawk, I think identical with *Astur soloensis* from the Celebes, and among the fly-catchers there are at least four new species, one closely allied to a Celebes form. Amongst the pigeons is a beautiful Ptilopus, *P. viridis, var.* or what may perhaps hereafter prove to be a distinct species; also the beautiful *Carpophaga rufigula* which is closely allied to *C. rubricera* from the Duke of York Islands, and New Ireland. The collection also contains fine specimens, adults and young, of the Megapodius from the Island of Savo, *M. brenchleyi* of G. R. Gray. A fine species of Halcyon, probably *H. chloris*, a great number of the beautiful *Dicæum erythrothorax*, besides many other birds, made known to us by the early voyagers. The following is a list of the species with remarks respecting them.

1.—ASTUR SOLOENSIS, *Lath.*

Sharpe, Cat. Birds I., *pp*. 114-115.

This bird agrees well with the description of *Astur soloensis* in Sharpe's Catalogue, Birds I., p. 114-5, although in the present specimens there are no bars on the tail or wings. The whole of the upper surface is of a uniform light bluish ashy-grey, almost white on the forehead, ear-coverts and throat; dark ashy-grey on the wing, quills and tail, the under surface of the tail is almost of the same tint as the upper, the thighs have a wash of ruddy vinous; the chest, breast, and abdomen of a rich deep vinous red; bill and claws black, cere, gape, legs and feet yellow.

Total length 13 in.; wing 7·3 in.; tail 6·4 in.; tarsus 2·2 in.; mid. toe *(s. u.)* 1·3 in.; culmen 1·1. I think this species belongs more to the subgenus *Leucospiza* than to *Astur* proper.

Two specimens were all that were obtained and do not differ in plumage, the under wing-coverts are white with the greater series largely tipped with brown.

Loc. Gaudalcanar.

4.—HALCYON SANCTUS, *Vig. & Horsf.*

Sharpe, Monog. Alced. pl. 91.

Several specimens; the bills seem in comparison, more slender than in the New South Wales examples.

Loc. Gaudalcanar; Savo; Cape Pitt.

5.—HALCYON CHLORIS, *var.*

Sharpe, Monog. Alced. pl. 87.

One specimen, fully adult, which with some doubt I refer to this species; the throat and centre of the abdomen are white, but the rest of the under surface is of a rich buff, richer and deeper on the under wing-coverts and axillaries; the ear-coverts and line round the head jet black, the broad collar tinged with buff and margined behind with black, which color also pervades the shoulders and anterior part of the interscapular region.

Loc. Cape Pitt.

6.—HALCYON LEUCOPYGIA, *Verr.*

Cyanalcyon leucopygius, *Verr.; Sharpe, Monog. Alced. pl.* 74, (♂).

A fine series of this beautiful species was collected by Cockerell at Gaudalcanar; one sex only being previously known, I may mention that those marked as females differ only, in having the blue of the back extended to the upper tail-coverts, in fact the white of the rump is replaced by blue; both sexes have the white collar round the neck.

	♂	♂	♀	♀	♂	♀	♀
Total length ..	7·5;	7·2;	7·8;	7·45;	8·;	7·5;	7·4
Wing	3·5;	3·25;	3·65;	3·45;	3·55;	3·45;	3·5
Tail	2·4;	2·2;	2·4;	2·35;	2·3;	2·45;	2·4

	♂	♂	♀	♀	♂	♀	♀
Tarsus	0·5 ;	0·52 ;	0·5 ;	0·5 ;	0·5 ;	0·5 ;	0·5
Bill from forehead	1·8 ;	1·7 ;	1·8 ;	1·7 ;	1·65 ;	1·7 ;	1·6
Bill from nostrils..	1·45 ;	1·3 ;	1·4 ;	1·35 ;	1·21 ;	1·35 ;	1·3

7.—CACATUA DUCORPSII, *Homb. et Jacq.*

This is evidently a common species found all over the group.

Loc. Savo; Gaudalcanar, &c.

8.—LORIUS CHLOROCERCUS, *Gould.*

One specimen from Isld. of Savo.

9.—LORIUS CARDINALIS, *Homb. et Jacq.*

A large number of this beautiful species was obtained. I find the females slightly smaller than the males, but equally bright in color. The base of the bill is horn-color, the tip red; the

the Port Moresby and the Aru Island species, in which the head above is brown in the young birds.

Loc. Savo.

11.—Eclectus polychlorus, *Scop.*

The specimens from Savo are smaller than those from Port Moresby, and agree better in size with the birds from the Duke of York Islands.

The following measurements of Birds from various localities may be of interest:—

	Total length	Wing	Tail	Tarsus	Culmen.	
Port Moresby.						
♂	13,	10·2,	5·2,	1.	1·9	Inches.
♀	13·3	10·1	5·15	0·9	2·1	,,
Duke of York Group and New Ireland.						
♂	12·4,	10,	4·5,	0·85,	2	,,
♀	11·85	9·5	4·4	0·8	1·7	,,
Savo, Solomon Islands.						
♂	11·8	9,	4·4	0·8	1·8	,,
♀	11·9	9·3,	4·5	0·8	1·7	,,
Katow, New Guinea, from Voy. of the "Chevert."						
♂	14·7,	10·3,	5·5,	0·95,	2·25	,,
♀	14,	9·7,	5,	0·9,	2	,,
*♀	10	8·2	3·9	0·75	1·5	,,

*A small specimen from South Coast of N. Guinea, belonging perhaps to a different species; no locality given.

12.—Centropus milo, *Gould.*

Several fine specimens, adults, males and females, and two young ones.

The young have the lower portion of the body from the shoulders, including the wings to the tail, light rufous with blackish green cross-bars, on the tail these bars are oblique and about 16 in number.

Loc. Gaudalcanar.

13.—Eudynamys taitiensis, *Sparm.*

Three specimens only.

Loc. Savo.

14.—? Chalcites plagosus. *Temm.*

Two specimens only, smaller than the Australian birds of this species (?), and with a much larger and stronger bill, perhaps identical with *C. minutilus*. *(Gould.)*

Loc. Savo.

15.—Pachycephala orioloides, *Peale.*

Several specimens adults and young, both males and females of this fine species.

Adult female.—The whole of the head, the neck, chest, mantle, wings and tail above, cinnamon brown, becoming almost white on the throat, and deepest in tint on the ear-coverts, head, and

17.—EURYSTOMUS CRASSIROSTRIS, *Sclater*.

In no way different from the Port Moresby examples. Several specimens from Cape Pitt, &c.

Loc. Savo ; Gaudalcanar, &c.

18.—EDOLIISOMA MARESCOTII, *G .R. Gray*.

Adult males and females ; and young in change of plumage. The young males resemble the females.

19.—GRAUCALUS HYPOLEUCUS, *Gould*.

This species agrees well with the description in the "*Voyage au Pôle Sud*," of *G. desgraizei*, it is however smaller, and undoubtedly identical with Mr. Gould's *G. hypoleucus*. A young bird, has the scapulars brown with white margins.

Loc. Gaudalcanar.

20.—GRAUCALUS DUSSUMIERI, *Less.*

Male and female from Gaudalcanar.

21.—GRAUCALUS PUSILLUS, *sp. nov.**

This species comes near to *G. dussumieri* of Homb. et Jacq., but differs in having the rump of the same uniform tint as the back and upper tail coverts, it is also smaller.

Adult.—The whole of the upper and under surface is of a bluish lead grey, the tail becoming black above, washed with bluish grey on the outer webs of the centre two feathers, and dull blackish with an ashy grey tinge below ; wings black, the third and remaining quills margined narrowly on the primaries, broadly on the secondaries, with the same tint as the back, which increasing on the tertiaries occupies the whole of their outer web, the under surface of the wing is ashy grey, becoming whitish ash color towards the base of the inner webs ; the under wing-coverts and axillaries with narrow transverse bars of black and white. The lores from the nostrils to the eye are black, which color is slightly produced anteriorly beneath that organ; bill and legs black.

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* This may hereafter prove to be a smaller race of *G. muelleri*, (Salvd.), but at present I prefer to keep them distinct.

A second specimen said to be the female of this species, differs only in the loreal region being duller, or of a blackish lead color, and the remainder of the under surface (except the legs) from opposite the shoulders and including the under tail-coverts transversely barred with alternate black and white lines; bill and legs black.

	MALE.	FEMALE.
Total length	8·5 in.	8·5 in.
Wing	4·9	4·9
Tail	4·2	4·3
Tarsus	0·8	0·8
Bill from forehead	0·76	0·8

determine the species definitely; and it may probably prove to be undescribed, however it comes near *C. vanwickii* of Cassin and *C. perspicillata*, Temm. There are so many of this genus, and most of them so wretchedly and meagrely described that it is impossible to determine many of them, without reference to the type specimen itself.

Loc. Gaudalcanar, &c.

24.—MACROPYGIA SP.,

I have not been able to determine this species but it is not unlike a species common at the New Hebrides.

Loc. Lango, Gaudalcanar.

25.—CHALCOPHAPS CHRYSOCHLORA, *Gould.*

One young specimen evidently of this species.

Loc. Gaudalcanar.

26.—PTILOPUS VIRIDIS, *var.*

? (P. viridis, (*Linn.*) *Elliot, P.Z.S.* 1878. *p.* 560.)

On the whole, this bird agrees very well with *Ptilopus viridis*, Linn., (Elliot, P.Z.S. 1878, p. 560.) but it certainly has not the "*tertials green edged with grey*"—they are green with a clear very light ashy, almost white, spot at the tip, and in this respect agree with Mr. Elliot's description of these feathers in *P. eugeniæ* Gould. There is a large light ashy grey *spot* on the shoulders, but no *band;* the undertail coverts are yellow, with a broad dark green stripe on their inner webs, none of the secondaries have any grey at their tips as described in *P. geelvinkianus*, Schleg.,

Having carefully compared my birds with Mr. Elliot's descriptions of *P. viridis*, *P. geelvinkianus*, and *P. eugeniæ*, I believe that although closely allied to these species, the present will prove distinct from all of them, particularly in having a violet tinge or line bordering the sides and lower part of the rich deep purple-red of the chest. By carefully comparing my description, the differences will be apparent.

Adult male.—The forehead as far as the eyes, the lores and the chin dull ashy grey, back of the head and neck, ear-coverts, sides of the neck, and all the upper surface dull bronzy green, with a yellowish tinge, the quills below and their concealed portions above, ashy grey; the under wing-coverts green; the secondaries with a narrow margin of yellow at the tip on the outer webs; the tertials with a large roundish subterminal spot of light grey (almost white); on the shoulder a roundish patch of light ashy grey. Tail above like the back, the concealed portions of the feathers blackish at the base, a subterminal spot of ashy grey near the tip, below blackish ashy brown, an ashy white band across the tips; the lower part of the throat and the chest a large pyriform patch of deep reddish-purple, which light purple or lilac tint on the chest; the shoulders and the spots on the wing-coverts, scapulars, and tertiaries, deep violet, almost black; the greater wing-coverts and secondaries margined with yellow on the outer webs; *all* the tail feathers with an apical whitish band, under tail-coverts pure white, with a broad line of green on the *inner web*.

Loc. Lango, Gandalcanar.

28.—MEGAPODIUS BRENCHLEYI, *G. R. Gray*.

This species was first indicated by Dr. Sclater from Eggs obtained at Savo by Mr. Brazier, but no description was given of the bird either adult or young. Dr. G. R. Gray obtained the eggs and young birds from the author of the "Cruise of the Curaçoa," Mr. Brenchley, after whom he named this species. It is probably the same species as alluded to by Dr. Sclater, but the practice of naming birds from eggshells, or from a recollection of having once seen a specimen in the field or otherwise without having ever handled a single individual has been carried rather too far of late, e. g., *Merula bicolor*, and others.

Megapodius brenchleyi.

Adults from Savo—

Total length in Inches ..	13,	12,	13,
Wing	9	9·1	8·8
Tail	3·2	32	3·3
Tarsus	2·8	2·5	2·8
Bill from forehead ..	1·1	1	1
„ nostril ..	0·55	0·5	0·55
„ gape ..	1·15	1.1	1.15

Adult male.—The forehead, space round the eyes, and scantily feathered portions of the neck, reddish carmine. The neck, mantle, chest, breast, dark slaty brown; head, flanks, abdomen, and under tail-, and wing-coverts, and under sides of the tail and wing feathers dull dark brown; the wings and tail above, and the back, rump, and upper tail-, and wing-coverts dark olive brown; bill light-horn colour, yellowish at the tip; legs and feet purplish blackish-brown.

Loc. Savo.

29. STURNOIDES FULVIPENNIS, *Homb. et Jacq.*

Numerous specimens. This is evidently a common species.

Loc. Lango, Gaudalcanar.

30.—CALORNIS CANTOROIDES, *Lesson.*

C. cantoroides (Less.), Sharpe Journ. Linn. Soc. Zool. XIII., *p.* 318.

Adult male.—The whole of the upper and under surface black, flanks and under tail-coverts; centre of the abdomen white; under surface of wings and tail brown.

Loc. Savo.

31.—CALORNIS METALLICA, *Temm.*

I have before me a very large series of long-tailed glossy starlings, in fact I have examined several hundred specimens from various parts of Australia, from Port Denison to Cape York, from Torres Straits, Port Moresby, and other parts of the south coast of New Guinea, Duke of York Islands, New Ireland, and the Louisades: all these I have carefully compared with those from the Solomon Islands, and although there are slight individual differences in the extent of the purple reflections among those from each separate locality, yet I find specimens from *all these* localities in which there is not the slightest difference in plumage, and very little in size. An average-sized skin from Solomon Islands measures:—total length from tip of bill to tip of tail, 8·7 in.; wing, 4·4; tail, 4·4; tarsus, 0·9 in.; hind-toe, (s.u.,) 0·45; mid-toe, (s.u.,) 0·8; bill from forehead, 0·9; from angle of the mouth, 1 in; from nostril, 0·5; culmen from forehead, 0·94 in. An average-sized Australian bird measures: —total length, 8 in.; wing, 4·3; tail, 3·9; tarsus, 0·95; hind-toe, (s.u.,) 0'5; middle toe, (s.u.,) 0·82.

Those from the Duke of York group, and New Ireland, and those from Port Moresby, and Torres Straits, are about the same in size, all differing *inter se.* slightly in the extent of the purple reflections,

32.—DICÆUM ERYTHROTHORAX, *Homb. et Jacq.*

A large number of this beautiful species was obtained. It is one of the most common species. The female is of a blackish-brown with a rich metallic greenish gloss; the under surface is slaty-brown, duller on the sides of the chest; the throat, chest, abdomen, and under tail-coverts nearly white, the flanks olive-yellow. In some very old males the throat has a few crimson feathers in the centre of the white patch, in some, the white of the throat is separated from the crimson of the chest by a line of brown, but in others the crimson and white join.

The young (sex ?) resemble the females, but on leaving the nest have only a trace of white on the throat, which is extended down the centre to the abdomen; the back wings and tail are glossed with metallic reflections, but there is little or no gloss on the head, and no buff on the flanks; the base of both mandibles flesh red.

	♂	♂	♂	♀	♀
Total length	3·4	3·2	3·15	3·4	3·3
Wing	1·95	2	2	1·85	1·82
Tail	1·1	1·1	1·1	1.	1·05
Tarsus	0·51	0·5	0·51	0·5	0·5

Total length, 5 in.; wing, 2·6; tail, 2·5; tarsus, 0·65; bill from forehead, 0·6; from gape, 0·6; from nostril, 0·35; width at angle of the mouth, 0·35 in.

Loc. Gaudalcanar.

It is possible that the next species may prove to be the female of this species, but at present we have no evidence on this point.

34.—MYIAGRA PALLIDA, *sp. nov.*

The whole of the head, except the throat, ear-coverts, back of the neck, and mantle, dark bluish ashy grey; back, brown, with a rufous tinge; wings, dark brown; the shoulders, ashy; the primaries, all except the first two, narrowly margined except at the tip, and the secondaries broadly margined with pale rufous; scapulars and upper coverts washed with the same tint, upper tail-coverts and tail, pale rufous, the centre two feathers, and the two on either side on the outer web, washed with brown; under surface and the under tail-coverts light rufous; the inner webs of the secondaries, and basal portions of the inner webs of the primaries, pale rufous buff; under wing-coverts, white; throat, chest, and remainder of the under surface, white; bill, bluish horn color; legs, lead blue. Total length, 5 in.; wing, 2·6; tail, 2·5; tarsus, 0·55; bill from forehead, 0·65; from gape, 0·7; from nostril, 0·35 in.

Loc. Lango, Gandalcanar.

35.—MONARCHA RUFO-CASTANEA, *sp. nov.*

Adult male.—The whole of the head, throat and neck, sides of the chest, and all the upper surface of the body, black, slightly glossy; wings and tail, blackish brown, under surface, dull brown, the inner webs of the quills inclining to buff on their basal margins; the chest, and all the under surface of the body, under wing and under tail-coverts, dark rich rufous; bill, bluish horn color, the margins and tip of lower mandible, whitish. Total length, 5·8; wing, 3·1; tail, 2·65; tarsus, 0·57 in.; bill from forehead, 0·8; from gape, 0·85; from nostril to tip, 0·5.

An immature bird, which is probably the young of this species, has the whole of the upper surface of the body, head, throat, and neck, dull bluish grey; the wings and tail of a brownish tint; a slight tint of rufous on the outer webs of the quills of the wings; chest slightly tinged with rufous; breast and abdomen, flanks and under tail-coverts, rich deep rufous; bill, black; legs and feet, bluish grey. On the whole, this species resembles *M. inornata* of Lesson, but is much deeper in tint, and has the upper part of the chest washed with deep rufous; size same as the preceding adult.

Loc. Lango, Gaudalcanar.

36.—MONARCHA BRODIEI, *sp. nov.*

Adult male.—The whole of the head, chin and throat, ear-

Adult female and *young male*.—The female is slightly larger than the male, all the upper surface dull brown; tail blackish brown, three outer feathers largely tipped with white, the secondary coverts white, washed with light rufous; the sides of the throat and of the neck, the chest, and sides of the breast, light rusty yellow; flanks washed with the same tint; abdomen and under tail-coverts white; the throat with elongate feathers of a light brown tinged with rusty; bill blackish horn color; legs and feet lead-blue.

Progress towards maturity.—The brown of the upper surface and wing feathers becomes black; the rusty hue of the secondary coverts, and of the under surface white; in one immature specimen I find the throat feathers of the same rusty yellow hue as the chest and sides.

This fine, distinct species comes near to *Monarcha loricata* of Wallace, and *M. leucotis* of Gould, but is quite distinct from them and also from *M. leucura*, (G. R. Gray).

I have named it after Capt. Brodie of the Schooner "Ariel," by whose instrumentality this fine collection was made.

Loc. Lango, Gaudalcanar.

37.—SAULOPROCTA COCKERELLI, *sp. nov.*

Adult male.—The whole of the upper surface, the head, and the throat, jet black; the wings and tail, blackish brown; the inner secondaries and scapulars broadly margined and tipped with white, which forms a broad white band down the wing; over the eye a narrow isolated spot of white; the chest and breast, black; the feathers on the sides of the throat adjacent to the ear-coverts, very slightly tipped with a subterminal spot of white, those on the chest conspicuously tipped with a lanceolate oblong subterminal spot of the same color, which increases in size on the breast feathers, and joins the white of the abdomen where the feathers are white with a narrow black margin; centre of the abdomen, flanks, and under tail-coverts, pure white; the bases of all the feathers black; under wing-coverts, blackish brown tipped with white; under surface of wings and tail, brown; bill and legs, black; rictæ stiff and strong, black not reaching to the tip of the bill. Total length, 6·2 inches; wing, 3·4; tail, 3·5; tarsus, 0·58; bill from forehead, 0·7 in.; from gape, 0·73; from nostril, 0·4. in.

I have named this species after Mr. James Cockerell, a most persevering collector, who has collected largely in Tropical Australia and in the Islands of the Austro-Malayan Region.

Loc. Lango, Gaudalcanar.

38.—SAULOPROCTA TRICOLOR, *Vieill.*

Several specimens, this species is nothing more than a large form of *S. motacilloides*, and is identical with *Muscicapa melaleuca*, white; chest below the white throat, black; the lower portion having white margins to the feathers; sides brown, having a rufous tinge towards and on the flanks; thighs rufous-brown; abdomen, white; wings above rich brown, with a faint tinge of rufous on the outer webs of the secondaries and scapulars; a rufous spot on the under margin of the wing, under coverts white; on the crown of the head, behind the rufous frontal band the feathers have a slightly striated appearance, from their central portions being slightly darker; bill and rictæ, black, the latter not extending to the tip; legs, dark olive brown. Total length, 5·2; wing, 2·6; tail, 3·1; tarsus, 0·7; bill from forehead 0·55, from nostril to tip, 0·3.

Loc. Lango, Gaudalcanar.

40.—CINNYRIS FRENATA, *Mull.*

Several specimens of this widely distributed species; I have compared them with specimens from Duke of York Islands, Port Moresby, Cape York, Trinity Bay, and Port Denison, without finding any differences betwen them.

Loc. Gaudalcanar.

41.—CINNYRIS (?) DUBIA, *sp. nov.*

Adult male.—All the front of the head, sides of the head, crown, ear-coverts, and throat, black; back of the neck, chest, and all the upper and under surface of the body, olive yellow, of a clearer yellow on the inter-scapular region and back; wings and tail fuscous black; the outer webs of all the quills, except the first two primaries, and the outer two rectrices, margined with olive yellow; under wing-coverts, and the basal portion of the inner webs of the quills, white; axillaries, yellowish; under surface of the wings and tail, blackish brown; under tail-coverts, dark brown, washed with olive yellow. Total length to base of bill, 4 in.; wing, 2·6; tail, 2 in.; tarsus, 0·7 in.; bill from forehead, 0·86; from nostril to tip, 0·57; culmen, 0·9.

A young bird has the ear-coverts brown, and an indication of a yellowish orange patch on the chest, some feathers also on the rump and upper tail coverts have an orange brown tinge.

I am in doubt whether this species may not prove to belong to the Meliphagidæ, coming between the genera *Myzomela* and *Glyciphila*.

Loc. Savo.

42.—BUTOROIDES JAVANICA, *Horsfield.*

One specimen only.

Loc. Savo.

43.—STERNA GRACILIS, *Gould.*

One specimen only.

CONTRIBUTIONS TO THE ZOOLOGY OF NEW GUINEA.

PART IV. AND V.

REMARKS ON RECENT COLLECTIONS, MADE BY MR. ANDREW GOLDIE, IN THE SOUTH EAST PORTION OF NEW GUINEA AND THE LOUISIADES.

BY ED. P. RAMSAY, F.L.S.; C.M.Z.S.; COR. MEMB. ROYAL SOC. TASMANIA; &c.

(Continued from page 305, *Vol. III.*, 1878.*)*

Mr. Goldie having recently returned from New Guinea, has placed at my disposal a third collection of Mammals and Birds, which he has recently obtained during his excursions inland. The farthest point reached by Mr. Goldie was about 70 miles from the Coast, and here the most interesting portion of his collection was made; of the remainder, consisting chiefly of such species as I have previously recorded, I shall mention only those not before enumerated, or those which I consider of special interest.

MAMMALS.

PART IV.

1.—PTEROPUS CONSPICILLATUS, *Gould.*

Mamm. Aust. Vol. III., pl. 29.

Several specimens from Port Moresby.

PTEROPUS SP.

A large species, not unlike the large rufous-bodied species from the New Hebrides.

Total length of body ..	12 inches
Humerus	5·3
Ulna and Radius	6·8

The Thumb, 1st. joint	0·75	inches, enclosed in membrane.
,, 2nd, ,,	1·7	inches.
,, 3rd. ,,	0·95	(including the nail).
Nail	0·85	width at its base 0·3 inches.
First finger	5·3	inches.
Second finger	13·1	,,
Fourth finger	8·6	,,
Femur	2·3	,,
Tibia	3·1	,,
Foot and longest toe	2·2	,,
Width of interfemoral membrane from		
perineum	0·7	to outer margin.
heel	1·3	,, ,,
knee	1·8	,, ,,
Length of tendon from heel	1·4	

shoulders yellowish-tawny, all the under surface tawny, darker in tint and slightly rufescent.*

2.—MACROPUS CRASSIPES, *Ramsay*, P. L. S. of N. S. W., Vol. I., p. 162.

Several large specimens, the largest measures—

Total length from nose to tip of tail, 5 feet 7 inches.

Tail, 2 feet 7 inches; forearm and hand about 11 in., *(.s.u.)* longest nail, 1·2.

Hind foot and toes, *(.s.u.)*, 8·6; nail of great toe, 1·6.

Head, 7·5; ear, 3 inches; from tip of nose to ear, 6·4—to eye, 3·8.

DENDROGALUS sp.

I find no specimens of any *Dendrogalus* in Mr. Goldie's collection; it is probably the next species my informant referred to as having been obtained.

3.—DORCOPSIS LUCTUOSA, *Garrod, P. Z. S.*, 1875, *p.* 43, *pl. VII.*

Halmaturus luctuosus, *D'Albertis, P. Z. S.*, 1874, *p.* 110.

Two spirit specimens, females, and three skins, males, of this fine species; Mr. Garrod has given such an exhaustive account in his valuable memoir, above quoted, that it is needless to add any remarks of my own, I may mention however that the largest specimen measures:—

Total length, (dried skin); ♂, 3 feet 9 inches; tail, 16½ inches; head to ears, 4·3 inches; hand and nails, 2·5 inches; hind foot and nails, 5 inches.

The females, although very small specimens, were carrying good sized young in their pouches.

Loc. Scrubs on the Goldie and Laloki Rivers.

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* I can find no description of this species in any work at my disposal, but it has probably been described long ago.

4.—**Perameles moresbiensis**, *Ramsay;* P. L. S., N. S. W., Voll. II., p. 14.

Several specimens, adults and young.

Loc. Laloki, and Goldie Rivers.

BIRDS.

Part V.

(The species not previously recorded are numbered continuously from Vol, III., p. 305, 1878.*)*

The collection of Birds contains about 500 specimens, including several of the new species, which I have recently described in former papers, there are also several species of interest which are worthy of mention.

Ægotheles bennettii, *Sclater*

Ninox undulata, *Ramsay.*

This species of which we have now a second specimen, seems to be closely allied to *Ninox humeralis*, Homb. et Jacq., *Voyage au Pôle Sud.*, *Zool. III.*, *p.* 51; on examination of the plate and description in this work however, I believe sufficient differences will be found to warrant its being separated therefrom as a distinct species.

Loc. Laloki River.

206.—Cuculus canoroides, *Mull.*

Five specimens, adults and young, scarcely to be distinguished from the European form *C. canorus*, to which species these, as well as the Australian birds, must eventually be referred.

Loc. Goldie River.

Graucalus boyeri, *Q. et Gaim.*

Two specimens, adult male and female.

Loc. Goldie River.

207.—Campephaga sp.†

Probably new, resembling *C. rufiventris*, but the under surface closely barred from the chin to the flanks with narrow black wavy lines; under tail-coverts clear light rufous; under wing-coverts white; total length, (of skin) 6·3; wing, 3·6; bill, 0·5; tarsus, 0·6; tail, 3·5.

Loc. Laloki River.

Dendrochelidon mystacea, *Less.*

Two specimens from Teste Island.

Myiagra plumbea, *Vig. & Horsf.*

Gould, Bds. Aust., fol. Vol. II., pl. 89; *id., Handbook, p.* 352.

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† Perhaps *C polygrammica* G. R. Gray.

Two specimens in Mr. Goldie's collection both males, I find no material difference between them and the Australian examples; however they are a trifle smaller, and of a shade lighter in tint. Wing, 3·2 inches; bill, 0·6 inches.

Loc. Laloki River.

MICRÆCA ALBOFRONTATA, *Ramsay*.

Mr. Goldie informs me he shot several of this fine species at a considerable distance inland on the Goldie River, but most of the specimens, falling in the water, were swept away before he could secure them; they frequent the opens in the scrubs, and in habits resemble the other species of the genus.

Loc. Laloki River.

208.—MACHÆRIRHYNCHUS FLAVIVENTER, *Gould*.

perch on a branch or tree. Mr. Broadbent informs me that *Eupetes cærulescens*, (*E. nigrocrissus* of Salvadori), of which species also Mr. Goldie has sent several specimens, is never found except on the ground, and is lively and active in its movements.

Loc. Mountain scrubs of the Goldie River.

209.—? Rectes decipiens, *Salvadori.*

Salvad. Ann. Mus. Civ. di St. Nat. Genov. XII., 22 *Luglio.* 1878.

The specimen before me differs from Dr. Salvadori's description in having the head and throat, and the wings and tail above *jet black ;* the remainder of the plumage rich cinnamon-rufous above, a little paler below ; the outer tail feathers slightly margined with rufous on the outer web, towards the tip. Total length 9·5 inches ; wing, 4·2 ; tail 4·1 ; tarsus, 1·3 ; bill from forehead, 1·2.

Loc. Scrubs of the Goldie River.

210.—Dicrurus bracteatus, *Gould.*

The thick billed variety of a Dicrurus noted under *D. carbonarius* (Vol. III., p. 276), I believe on closer examination to belong to this species, others not differing from the N. S. Wales examples were also obtained.

211.—Microglossus aterrimus, *Gmel.*

Several specimens from Port Moresby and Laloki River. Individuals vary considerably in size. The young have a band of feathers across the breast margined with yellow.

212.—Cacatua galerita, *Lath.*

One specimen in Mr. Goldie's collection undoubtedly the same as the Australian birds from Cape York.

Trichoglossus subplacens, *Sclater.*

Mr. Goldie obtained a number of this species about 50 miles inland, they do not differ in any way from those from the Duke of York's group.

213.—CYCLOPSITTACUS CERVICALIS, *Salvadori.*

Five specimens; three males, and two females of this beautiful species were obtained near the Goldie River.

214.—HENICOPHAPS ALBIFRONS, *G. R. Gray.*

P. Z. S., 1867, *p.* 92, *pl.* 47.

Two fine specimens from Mr. Goldie's collection, and one specimen in the late Mr. Ingham's collection, obtained by Broadbent; from the Goldie River scrubs and mountain ranges.

215.—HEMIPODIUS MELANOTUS, *Gould.*

One specimen only, the first I have seen from New Guinea, although it is not uncommon at Cape York and on the Islands in Torres Straits.

216.—PORZANA QUADRISTRIGATA, *Horsf.*

? ÆGIALITIS FLUVIATILIS, *Bechst.*

Ægialitis hiaticula, *Linn.*, Ramsay, P. L. S. of N. S. W. III., p. 297.

In my former remarks I referred this species to *Ægialitis hiaticula*, (Linn.), but on a closer examination I find that it cannot be referred to that species; the birds are smaller, especially in the wings, and the tarsi longer, by nearly 0·1 inch; the black frontal band is larger and bounded in front with *white*, which *reaches* to the bill; black band on hind neck broad, the white one narrow; there is no white on the inner webs of any of the quills which are of a uniform brown, a little lighter on the inner webs; in all respects it agrees better with *Ægialitis fluviatilis*, (Bechst.) of which it is probably a variety.

A European male specimen before me measures :—

	Inches.
Total length (about)	6·5
Wing	4·7
Tail..	2·5
Tarsus	1
Bill from forehead	0·61
„ „ gape	0·6

The New Guinea birds average :—

Total length (about)	6
Wing	4·1
[The tertiaries equal the length of the primaries.]	
Tail..	2·2
Tarsus	1·03
Bill from forehead	0·7
„ „ gape	0·7

The chief differences being in the size, and in the New Guinea bird having pure white outer tail feathers; the second feather on either side has only a trace of the brown band; no white on the quills.

220.—**SULA FIBER**, *Linn.*

One specimen from South East Cape.

ERRATUM.—Vol. III., p. 265, for keraudreneri, *read* keraudreni.

In giving a list of the birds in these collections, I have not attempted any scientific classification, but have just enumerated them as they came most conveniently to hand, putting them under their various orders and families, more for the sake of convenient reference than for classification.

It will be observed that, of the 220 species here enumerated, many of them are now for the first time recorded from the Port Moresby district; it may also be noticed how closely the avifauna of these districts resembles that of the adjacent shores of Australia, in a great many instances the species being identical, and in localities and towards the Louisiades, are as might be expected, identical with species from the Solomon Islands,—*Caloenas nicobarica*, (*Linn.*), *Chalcophaps chrysochlora*, (*Wagl.*); *Ptilopus rivoli Carpophaga van-wyckii*, *C. pacifica*, *C. spilorrhoa*, *Lorius hypænochrous Trichoglossus massenæ*, *Sauloprocta tricolor*, and many others as will be seen in the List showing the distribution of the species. Out of the 224 species enumerated about 95 of them are found in Australia, 7 only of these being Sea birds, and if I add to this list other Australian species obtained by D'Albertis, and during the Macleay Expedition, the number of Australian species found in New Guinea will reach 150—and out of the 140 genera 107 are also found to be common to both Countries.

Of fifteen genera and twenty species of mammals known to me from the South East Coast of New Guinea; thirteen genera and ten species at least, are also found on the adjacent coast of Australia.

List showing the distribution of the species. The names of those I have recently described as new are in small capitals.

	Port Moresby District.	South Cape & Louisiades.	Duke of York Group &c.	Solomon Islands.	Australia.
1. Haliaetus leucogaster, *Gm.* ..	*	*	*		*
2. Haliastur girrenera, *Vieill.* ..	*	*	*		*
3. Haliastur sphenurus, *Vieill.* ..	*	*			*
4. Baza reinwardtii, *M. & Sch.* ..	*		*	?	
5. Milvus affinis, *Gould*	*				*
6. Henicopernis longicauda, *Garn.* ..	*				
7. Machærhamphus alcinus, *Westerman*	*				
8. Accipiter (cirrhocephalus ?) ..	*				*
9. ASTUR SHARPEI, *Ramsay* ..	*				
10. Astur leucosomus, *Sharpe* ..	*				*
11. Pandion leucocephalus, *Gould* ..	*	*	*		*
12. Strix delicatulus, *Gould* ..	*	*	*		*

	Port Moresby District.	South Cape & Louisiades.	Duke of York Group &c,	Solomon Islands.	Australia.
13. Strix tenebricosus, *Gould* ..	*				*
14. Ninox dimorpha, *Salvad.* ..	*				
15. NINOX ALBOMACULATA, *Ramsay* ..	*				
16. NINOX UNDULATA, *Ramsay* ..	*				
17. Microglossus atterimus, *Gm.* ..	*				
18. Cacatua galerita, *Lath.* ..	*				*
19. NASITERNA PUSILLA, *Ramsay* ..	*				
20. APROSMICTUS CHLOROPTERUS, *Ramsay*	*				
21. Cyclopsittacus suavissimus, *Sclat.*	*				
22. Cyclopsittacus cervicalis, *Salv.* ..					
23. Geoffroyius aruensis, *G. R. Gray*	*				
24. Eclectus polychlorus, *Scop.* ..	*		*	*	

	Port Moresby District.	South Cape & Lousiades.	Duke of York Group &c.	Solomon Islands.	Australia
44. TANYSIPTERA SALVADORIANA, *Ramsay*	*	*			
45. Syma torotoro, *Less.*	*				
46. Halcyon macleayi, *Jard. & Selb.*	*	*			*
47. Halcyon albicilla, *Cuv.*		*	*	*	
48. Halcyon sanctus, *V. & H.*	*	*	*	*	*
49. Dacelo gaudichaudi, *Q. et Gaim.*	*				
50. Dacelo leachii, *Vig. & Horsf.* †	*				*
51. Melidora macrorhyncha, *Less.*	*				
52. Merops ornatus, *Lath.*	*	*	*		*
53. Rhytidoceros plicatus, *Penn.*	*	*	*	*?	
54. Eurystomus crassirostris, *Scl.*	*	*	*	*	
55. Podargus papuensis, *Q. et G.*	*				*
56. Podargus (? marmoratus, *Gould.*)	*				*
57. Ægotheles bennettii, *Salvad.*	*				
58. Caprimulgus macrourus, *Horsf.*	*				*
59. Dendrochelidon mystacea, *Less.*	*	*	*	*	
60. Collocalia spodiopygia, *Peale*	*			*	*?
61. Manucodia atra, *Less.*	*				
62. Manucodia keraudreni, *Less.* ‡	*				
63. Ptilorhis magnificus, *Vieill.*	*				
64. Paradisea raggiana, *Sclat.*	*				
65. Cicinnurus regia, *Linn.*	*				
66. Chlamydodera cerviniventris, *Gould*	*				*
67. Ailurœdus stonei, *Sharpe*	*				
68. Peltops blainvillei, *Garn.*	*				
69. Piezorhynchus alecto, *Temm.*	*	*	*		*
70. Machærirhynchus flaviventer, *Gould*	*				*
71. Monarcha carinata, *V. & H.*	*				*

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† D. intermedius, *Salvad.*

‡ Phonygama jamesi, *Sharpe.*

	Port Moresby District.	South Cape & Louisiades.	Duke of York Group &c.	Solomon Islands.	Australia.
72. Monarcha guttulatus, *Garn.* ..	*				
73. Monarcha aruensis, *Salvad.* ..	*				
74. Monarcha melanoptera, *G. R. Gray*		*			
75. Arses enado, *Less. & Garn* ..	*	*			
76. Myiagra plumbea, *Gould* ..	*				*
77. Rhipidura setosa, *Q. et Gaim.* ..	*	*	*		*
78. RHIPIDURA CASTANEOTHORAX, *Ramsy.*	*				
79. RHIPIDURA AMBUSTA, *Ramsay* ..	*				
80. Sauloprocta tricolor, *Vieill.* ..	*	*	*	*	*?
81. Micrœca flavigaster, *Gould* ..	*				*
82. MICRŒCA ALBOFRONTATA, *Ramsay*	*				
83. Micræca ? flavovirescens, *G. R. Gray*	*				

	Port Moresby District.	South Cape & Louisiades.	Duke of York Group &c.	Solomon Islands.	Australia.
103. Gymnocorax senex, *Less.*	*				
104. Oriolus striatus, *Q. et Gaim.*	*				
105. Sphecotheres salvadorii, *Sharpe*	*				
106. Eulabes dumontii, *Less.*	*				
107. Gracula orientalis, *Schleg.*†	*				
108. Calornis cantoroides, *Less.*	*			*	
109. Calornis metallica, *Temm.*	*	*	*	*	*
110. Pomatostomus isidori, *Less.*	*				
111. Pseudorectes ferrugineus, *S. Mull.*	*				
112. Rectes decipiens, *Salvadori*	*				
113. Colluricincla brunnea, *Gould*	*				*
114. Colluricincla megarhyncha, *Q. et G.*	*				*
115. Cracticus cassicus, *Bodd.*	*				
116. Cracticus mentalis, *Salv. & D'Alb*	*				
117. Cracticus quoyi, *Less...*	*				*
118. Pachycephala melanura, *Gould..*		*			*
119. PACHYCEPHALA COLLARIS, *Ramsay*		*			
120. Pachycephala sp. *(nov. ?)*		*			
121. PACHYCEPHALA FULIGINATA, *Ramsay*	*				
122. PACHYCEPHALA BRUNNEA, *Ramsay*‡	*				
123. Graucalus strenua, *Schleg.* ‖	*				
124. Graucalus melanops, *Lath.*,	*				*
125. Graucalus angustifrons, *Sharpe*	*				
126. Edoliosoma melas, *S. Mull.*	*				
127. Edoliosoma plumbea, *S. Mull.*	*				
128. Edoliosoma (sp. ?)	*				
129. Edoliosoma *(schisticeps ?)*	*		*	*	

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† Mino robersoni, *D'Albertis.*

‡ The specific term of *brunnea* having been previously adopted for another species of Pachycephala, that of *dubia* may be used for this species.

‖(G. cœruleogriseus, *G. R. Gray.*)?

	Port Moresby District.	South Cape & Louisiades.	Duke of York Group &c.	Solomon Islands.	Australia.
130. Campephaga boyeri, *Q. et Gaim.*†	*				
131. Campephaga sloetii, *Schleg.* ..	*				
132. Campephaga rufiventris, *H. et J.*	*				*
133. Campephaga sp. ?	*				
134. Myzomela obscura, *Gould* ..	*				*
135. Conopophila albogularis, *Gould* ..	*				
136. STIGMATOPS ALBOAURICULARIS, *Ramsay*		*			
137. PTILOTIS GERMANA, *Ramsay* ..	*	*			
138. Ptilotis analoga, *Reich.* ..	*	*			*
139. Ptilotis versicolor, *Gould* ..	*				*
140. Xanthotis filigera, *Gould* ..	*				*
141. Glyciphila subfasciata, *Ramsay* ..	*				*
142. Philemon novæ guineæ, *S. Mull.*	*				

	Port Moresby District.	South Cape & Louisiades.	Duke of York Group &c.	Solomon Islands.	Australia.
160. Carpophaga zoæ, *Less.*	*				
161. Carpophaga rufiventris, *Q. et Gaim*	*				
162. Carpophaga pinon, *Q. et Gaim.*	*	*	*	*?	
163. Carpophaga van-wickii, *Cass.*		*	*	*?	
164. Carpophaga (*Globicera*) pacifica, *Gaim.*		*		*	
169. Carpophaga spilorrhoa, *G. R. Gray*	*	*			*
170. Ianthænas albogularis, *Bp.*	*				
171. Reinwardtæna reinwardtii, *Temm.*	*				
172. Geopelia humeralis, *Temm.*	*				*
173. Geopelia placida, *Gould*	*				*
174. Chalcophaps chrysochlora, *Wagl.*	*	*		*	*
175. Chalcophaps stephani, *Puch. et J.*	*		*		
176. Chalcophaps jobiensis, *Schleg.*	*		*		
177. Henicophaps albifrons, *Gray*	*				
178. Goura d'albertisi, *Salvad.*	*				
179. Calœnas nicobarica, *Linn.*		*	*	*	
180. Megapodius duperreyi, *Less.*	*	*			
181. Megapodius (*Talegallus*) fuscirostris,	*				
182. Synoicus cervinus, *Gould.*	*				*
183. Hemipodius melanotus, *Gould*	*				
184. Numenius cyanopus, *V.*	*	*			*
185. Numenius uropygialis, *Gould*	*	*			*
186. Lobivanellus miles, *Bodd.*	*	*			*
187. Squatarola helvetica, *Linn.*	*	*	*	*	*
188. Ægialitis geoffroyi, *Wagler.*	*	*	*	*	*
189. Ægialitis fluviatilis, *Linn.*	*				*
190. Ægialitis mongolus, *Pallas.*	*				*
191. Tringa crassirostris, *Temm.*	*	*			*
192. Tringa (*Schæniclus*) albescens, *Temm*		*			*
193. Tringa australis, *Jard. & Selb.*		*			*
194. Actitis hypoleucos, *Linn.*	*	*			*

	Port Moresby District.	South Cape & Louisiades.	Duke of York Group &c.	Solomon Islands.	Australia.
195. Gambetta pulverulentus, *Mull.* ..		*			*
196. Rallina tricolor, *G. R. Gray* ..	*	*			*
197. Porphyrio melanopterus, *Temm.* ..	*				
198. Gallinula tenebrosa, *Gould* ..	*				*
199. Gallinula ruficrissa, *Gould* ..	*				*
200. Porzana quadristrigata, *Horsf.* ..	*	*	*		*
201. PARRA NOVÆ-GUINEÆ, *Ramsay* ..	*				
202. Butoroides javanica, *Horsf.* ..	*		*		*
203. Butoroides flavicollis, *Lath.* ..	*				*
204. Tigrisoma heliosyla, *Less.* ..	*				
205. Nycticorax caledonicus, *Gmel.* ..	*		*	*	*
206. Herodias garzetta, *Linn.* ..	*	*	*	*	*

The Proposed Zoological Station at Sydney.

By N. De Miklouho-Maclay.

No one to whom the progress of Biology is not a matter of indifference, will be surprised that I again take up the subject of the foundation of a Zoological Station in Sydney. It is an Institution too important for all branches of Biology for the idea to be dropped.

That the *urgent necessity* of the matter is already understood, and the idea here and there is coming to a practical issue, witness the Zoological Stations in Europe and America, about the institution of which news has appeared in various periodicals since the 26th of August last year, when I first had the honor to direct the attention of the Society to this subject. [Vide "Nature," August 29th, 1878.]

Some days ago I had the pleasure of reading in "Nature" (   ) a communication concerning the Zoological Station in Naples. I am very much pleased that it has fallen to the lot of my friend, Dr. A. Dohrn, to have made himself in so high a degree useful to science. It is in truth a splendid result; about a hundred investigators have availed themselves of this opportunity to prosecute scientific investigations, of which, had this opportunity not offered itself, but few would have been carried out. So much the more must one treasure such a service as it is so far removed from egotism, and is the outcome of honest love of science, and a proper understanding of its needs.

The same scheme with which I came before the Linnean Society five and a half months ago, I have also sent to Japan to the German Eastern-Asiatic Society, and propose also sending it to M. A. Godeffroy in Samoa, and I have reason to believe that my proposals will not be without result in both places. The combined working of these three or four Zoological Stations, Japan for the northern, Samoa for the tropical, Sydney (also if possible in course of time in some place in New Zealand) for the southern region of the Pacific, will result in a few years in presenting us with a very complete conception of the fauna of the Pacific!

But as regards the question: *What has been done during* these last five or six months *for the foundation of a Zoological Station in Sydney?* I must answer with regret—*nothing!*

It is true that the Hon. Wm. Macleay has not neglected to place at the disposal of any bona-fide investigator his museum, library, and microscopes. Mr. W. A. Haswell and I have made use of this liberal permission. Mr. E. P. Ramsay has afforded me the opportunity of carrying on my work in the Australian Museum; the Trustees of that Institution have entered also in a most obliging manner into several of my projects. While expressing the most heartfelt thanks to all these gentlemen, I can, however, only repeat that *nothing* has yet been done for the Zoological Station in Sydney.

It would be a *total* misunderstanding of what is wanted, a bitter satire on the idea of a Zoological Station, to call the present working-places "Temporary Zoological Stations."

The nearly six months of my stay have confirmed my conviction that Sydney is an important and extremely convenient locality for a Zoological Station.

My intended short visit in Sydney has, nolens volens, on account of the interesting and valuable material, lengthened itself out to a stay of about half a year. A few dredging excursions in Port Jackson have shown me how rich and varied the marine fauna here is.

When I speak again on this theme—of the foundation of a Zoological Station—I assuredly do not address myself specially to the Linnean Society of New South Wales. I only embrace this opportunity to lay the matter earnestly before *every friend* of Biological Science in Australia. For science it is of no moment whether A or B does it; whether in this case Mr. Macleay, or the Trustees of the Australian Museum, or anyone else, takes upon him this important task. But to me as a stranger, it is easier to look at the whole matter impartially in a true light, and rightly to judge of the great advantages for the progress of science of a Station in Australia. But at the same time to me as a stranger, the ways and means for attaining the desired end are less known than to most of the gentlemen present. On that account I leave this part of the matter to those who are more competent; but I declare myself ready willingly to do everything that stands in my power for this project:—where science is concerned, all trifling considerations as a matter of course must give way. As the continuation of my journey will probably not allow me the pleasure of being present when a Zoological Station is definitely instituted, perhaps I may be allowed to indicate some points which must be borne in mind in connection with the arrangement and use of the future Station:

1.—It is very desirable (and every diligent investigator will share the opinion) that the opportunity should be offered to each man of science making use of the Station, if even with the minimum of comfort, to *live in the station itself.* It is in my opinion a *very* important point: in the first place a very great saving of time will result, and in the second the investigator will thus be in a position to lose *no* moment in which he feels himself to be in the mood most suitable for work.

2.—A supply of glasses should be purchased wholesale, in order that they may be lent to the investigators making use of the Station, or sold to them at wholesale price. Spirits of wine and other preservative media should also be obtained wholesale, and be free to the workers at wholesale price.

3.—The material used for investigation, if it is left behind by the investigators, should either (as may frequently be the case) be put aside as an interesting anatomical *preparation* in a permanent collection in the Zoological Station, or if it is worth the cost of preservation (the price of the spirit) be kept as *material.*

I have not grudged the time for going into these details, for I am so perfectly convinced of the absolute necessity of the Zoological Station, that I merely regard its foundation as a matter of time, and also because everything that I say here for the future Station in Sydney applies to any other (Japan, Islands of the Pacific, &c.) The interval between the bringing forward of my proposal (September, 1878,) and the actual foundation will afford a good test of the degree and intensity of scientific life in Australia—at least in Sydney.

EXHIBITS.

By Dr. Cox.—Young Cocoanuts and Dates from Port Mackay Queensland, brought to Sydney by Mr. Abrahams.

By Mr. Ramsay.—Several of the new Birds referred to and described in his recent papers on New Guinea.

By Mr. Brazier.—A fossil shell found by an Arab at El Kantana, in the province of Constantine, Algiers, 3,800 metres above sea-level. Also a *Spondylus*; the first living specimen found in Port Jackson, obtained in a dredge from a rocky bottom, at a depth of four fathoms.

Mr. Masters showed the new Crustaceans described by Mr. Haswell. Also, specimens of *Sauloprocta picta*, *S. motacilloides* and *S. tricolor*, to show that the species are identical. Also, *Meliornis Novæ Hollandiæ*, Sydney, and *M. longirostris* from King George's Sound,—which are certainly identical;—and *M. sericea*, Sydney, and *M. mysticalis*, King George's Sound—and *Rhipidura preissi*, King George's Sound and *R. albiscapa*, Sydney, also identical.

WEDNESDAY, FEBRUARY 26TH, 1879.

The President, the Rev. J. E. Tenison-Woods, F.G.S., etc., in the Chair.

The following gentlemen were elected Members of the Society:—J. Hobson Esq., and W. Wilkins Esq., of Sydney, and S. White Esq., of the Reed Beds, Adelaide.

PAPERS READ.

ON SOME NEW MARINE SHELLS FROM MORETON BAY.

Shell irregularly triangular, ventricose, spire almost hidden, white, shining, solid; whorls 6, the last alone visible. This is angular and flattened above, with a row of granules on the angle. There are four rows of granules, the lower two of which are almost obsolete. The spire only slightly slopes, and the apex is mammilate. The suture is conspicuous and slightly corrugate. Aperture narrow, long, and slightly flexuous. Labrum broad, thick, flattened, reflexed regularly and somewhat distantly toothed within. Lip much reflexed and expanded, thickened at the margin, anteriorly laminate and sulcate. Columella irregularly toothed, in two lines, the anterior and inner line long, narrow, close and interupted by a groove; the outer and upper line more regular, elevated on a kind of ridge and ending in two large teeth. Canal short, twisted, with a conspicuous goove behind.

Moreton Island, rare. The general form is somewhat like *Cassis fimbriata*, but it is not a tenth of the size, is quite white, and more solid. The almost flat spire and the very solid outer lip are very characteristic. All the individuals met with were about the same size.

THALOTIA MARGINATA, *n. s.*

***Testa** anguste conica, obliqua, solidâ, maculis parvis purpureis vel olivaceis tesselata; anfr.* 8½, *superne concavis, infra late marginatis vel carinatis,* 4 *lineis granulorum cinctis, oblique crebre squamose striatis; carina elevata, subplanata, supra suturam conspicua; granulis rotundatis subobsoletis; apice acuto, apert. oblique quadrata, lævi, margaritacea, pallide rosea, argentea, medio conspicue unisulcata; labro incrassato, medio producto; columella rotundata, postice truncata, haud tuberculata; basi rotundate convexa, subumbilicata, eleganter lirata, liris alternantibus granulosis, maculatis, radiatim striatis.* Long. 18. lat. 14.

Shell narrowly conical, oblique, solid, tesselated with small olive or purple spots; whorls 8½, concave above, below broadly marginate or carinate, girdled with four lines of granules of which the uppermost is often the largest, closely decussate with oblique squamose striæ, keel elevated, somewhat flattened and projecting over the suture in a conspicuous manner; granules rounded, subobsolete; apex acute, aperture obliquely quadrate, smooth, nacreous, of a rosy silver hue, with one conspicuous angular groove in the middle; outer lip thickened, produced in the middle; columella rounded, truncate below, not tuberculate, base convexly rounded, subumbilicate, elegantly lirate, the liræ being granular and alternating large and small, tessellate and radiately striate.

Moreton Bay, common. The young are distinctly umbilicate Many specimens have between the large liræ smaller ones on the whorls of the spire. The species differs especially from all previously described, in the roundly convex base and non-tuberculous columella. It comes very near to *T. zebrides*, Adams the periphery of the last whorl. Apex acute. Aperture obliquely quadrate, depressed, smooth inside, nacreous, labrum acute, columella curved, truncate. Base quite flat, spirally lirate and very finely transversely striate, pale yellowish-white and very faintly spotted with brown.

Moreton Bay, very rare. In the Museum at Brisbane, Coxen's collection.

ON ARAUJA ALBENS, DON.

BY THE REV. J. E. TENISON-WOODS, F.L.S., F.G.S., &c., &c.

At the close of the month of January of this year, the Hon. W. Macleay F.L.S., Hon. Secretary of this Society, called my attention to a peculiar asclepediaceous twiner which had suddenly made its appearance in his shrubbery. On examination I found it to be *Arauja albens*, Don., which is thus described by G. Don, *(Gen. Hist. Dichlam.* Vol. 4, p. 149.,*)* Herbaceous, leaves acute at the apex, cordately truncate at the base, white and pruinose beneath. Flowers dichotomously cymose. Twining shrub. Native of Brazil in the province of St. Paul. He further states that this species is made the type of a new genus *Physianthus* by Von. Martius *(Nova genera et species plantarum quas in itinere Brasilian collegit ab annis* 1817. 1820*)*. Mr. Bentham in the Flora Australiensis, vol. 4, p. 326, mentions this plant as one of the introduced Asclepiads which he understood had spread from gardens and become naturalized in the neighbourhood of Moreton Bay. I am informed by Mr. Bailey, who has given much attention to the subject, that it does not occur in Moreton Bay or near Brisbane, and this is the first time I have met with it at Port Jackson, though doubtless it is common in some parts of the colony. I have thought this instance of the gradual spread of a tropical plant as far south as this city is worthy of record, and where no doubt it will soon make itself a home under the favorable influences of our equal warm climate. The genus is named after Araujo a Portuguese botanist, and numbers thirteen species which are natives of tropical and subtropical America. In Walp. Ann. v. 501 the species is referred to Von Martius, genus *Schubertia*.

ON A MICRO-LEPIDOPTEROUS INSECT DESTRUCTIVE TO THE POTATO.

BY E. MEYRICK, B.A.

My attention was recently called by Mr. Macleay to the ravages of a small moth, belonging to the *Tineina*, which may under favourable circumstances become an almost fatal pest to potato-growers. Mr. Macleay received lately a large potato completely riddled with living larvæ of this insect, from which

Stgr., of which the larvæ feeds in an allied plant, *Solanum nigorum*, but in a different mode, by mining in the leaves; from this latter it differs, especially by the much longer terminal joint of the palpi. The potatoes affected rot and become worthless, even animals refusing them; in certain districts three-fourths of the crop was thus destroyed. The above-mentioned details of habit, so far as my information goes, all apply in the present case. The specimen potato must have contained originally at least forty larvæ, and was pierced with galleries in every direction, but chiefly round the exterior beneath the skin, so that it was wholly corrupted and useless. The larvæ pupated within their galleries, near the entrance, which they closed with silk. In the absence of good-bred specimens of the imago, it will be sufficient to describe it as a rather small narrow-winged member of the Gelechidæ, expanding about seven lines, with long recurved palpi and dull brown-grey, faintly-mottled fore wings. The particular specimens under consideration are believed to be from the Hunter River district; and Mr. Macleay is acquainted with the fact of its having occured in abundance, some years back, near Sutton Forest. It seems to me that to this species are probably also to be referred several specimens in my collection, captured at Melbourne and Sydney and in the Shoalhaven district. This must be confirmed by further comparison. At any rate, there is little doubt that the species is of wide general distribution, and only requires favourable circumstances to become as dangerous economically as the Colorado beetle itself. Judging from the fact of its thriving in Algeria, but not having shown itself further north (although an allied species occurs in Spain), it would seem that a hot and somewhat dry climate is required for its development; and probably wet summers would be fatal to it. It is likely that the climate of this colony would in most seasons suit the insect extremely well. What is its native country it would probably be hard to discover, as in the case of most domestic insects. It does not seem to have been noticed in the home of the potato

(America), and it is therefore perhaps more likely that it naturally feeds on some other species of *Solanum* in the inland regions of Africa, and has spread thence on a congenial food-plant being brought to meet it. It remains only to suggest an effectual remedy; this I am, unfortunately, unable to do. The larva being an internal feeder, no external washes or dressings could produce any effect, nor is it discoverable without digging up the plant. Should a crop be discovered, on harvesting, to be infested with this insect, the worthless tubers should not be thrown aside, but carefully destroyed with fire ; this would go far to diminish the numbers of the insects next season, but although it might keep them in check, would not be effectual as a cure ; and the moth, whose appearance would soon be learnt, might also be destroyed when seen. As the insect is now established, no other precautions distinguished from that species by its white diaphanous aspect, light pink peristome, and by the absence of the characteristic oblique fine striæ on the surface of the whorls.

2.—HELIX (*Geotrochus*) CHAPMANI, Fig. 2.

Shell imperforate, trochiform, very finely transversely striated from above downwards, and longitudinally striated with fine waved lines, white, diaphanous, shining; spire conical, whorls six, gradually increasing in size, apex acute, suture impressed, last whorl reflected, angulate at the periphery; base flattened; aperture oblique, irregularly ovately-lunate, margins approached joined by a dark reddish-black callus; peristome expanded and reflexed, margined externally with two narrow bands, the one next the lip orange-red, the other above but close to the last, dark black; these two coloured bands show through the shell and margin the internal edge of the peristome the same as they do the external edge; columella adnate, broad and expanded, coloured by the blending of the two coloured bands of a black and orange-red; interior of the aperture beyond the bands white.

Diameter, greatest 1·14; least 1·00; height 1·30 of an inch.

Habitat, Rossell Island, one of the Louisiade Group of Islands, Torres' Straits.

This lovely species is also in Mr. Hargrave's collection, recently purchased and presented to the Australian Museum by Mr. Thomas Walker, of Concord. The only shell having any pretention to the beauty of this fine species is *Helix xanthocheila*, Pfr. It is a more solid and opaque shell than *xanthocheila*, more broadly conoid, and the lip is less expanded. I have named it in honour of my friend Captain W. C. Chapman, R.N., late in command of H. M. Ship Dido, who laboured hard during his cruises through the Pacific Islands to develope their beautiful fauna.

The other figure on Plate 16 represents *Asplenium Prenticei*, a new Fern from Queensland, descrbed by Mr. F. M. Bailey, F.L.S., in the proceedings of this Society last Month, ante page 36.

EXHIBITS.

Dr. Cox exhibited a splendid specimen of *Turbinaria crater*, attached to an unusually large Pearl Oyster shell; also the flower of *Haemanthus tigrinus*, from the garden of Mr. Macdonald; and the two new Helices described in his paper.

Mr. Masters exhibited specimens collected on the Beach at Manly after a storm, of *Glaucus*, *Porpita*, *Janthina*, *Physalia*, (2 species), and *Velella cyanea*.

Mr. E. Meyrick exhibited the Potato-destroying Moth described

WEDNESDAY, MARCH 25TH, 1879.

The Rev. J. E. Tenison-Woods, F.G.S., etc , President, in the Chair.

DONATIONS.

The Illustrated Monograph of the Grasses of Queensland, from the Board of Inquiry into the Causes of Disease in Live Stock and Plants, Brisbane.

Vol. I., Part 3, of the Australian Medical Journal,—from the Medical Society of Victoria.

PAPERS READ.

ON THE RELATIONS OF THE BRISBANE FLORA.

BY THE REV. J. E. TENISON-WOODS, F.G.S., F.L.S., &c., &c.

Now that the great work of cataloguing our Australian Flora has been concluded, and that the *Flora Australiensis* of Bentham and Mueller is a standard of reference to which recourse can easily be had, the preparation of local floras will be the first care of Australian botanists. Until this is done, the real character of Australian vegetation will hardly be manifest. At present our knowledge does not go much further than an enumeration of species. Their geographical distribution has hardly been touched upon. Information as to the habitat where each specimen has been found is of course given in the "Flora," but the range of the species is not attempted. It could not be, indeed, without rendering the work inconveniently bulky, and as yet the information at the disposal of Mr. Bentham for the purpose is necessarily very small. Nor can this deficiency be remedied until a very large number of local floras have been published, and for this I suppose we shall have to wait many years. In the mean time what is very important is to have a good census made at certain important stations, such as Port Jackson, and at distinct points on the coast, and in the interior, where marked differences might be expected. This, of course, will be a work of considerable time and care, and we must look for its accomplishment only when botany shall have become a more popular study, and when the colonies can boast of a larger number of scientific votaries than they now possess. We may wonder, however, that Sydney has not had a census of its plants made. But this is a desideratum which will soon, no doubt, be supplied. Tasmania has recently been favored by a very elaborate census from the hands of Baron von Mueller, a census which, as it was made under his care, and with the benefit of his vast experience and knowledge, must be ever regarded as the most valuable that could be composed. Brisbane has for the include is 24 miles round the city, which is in Lat. 27° 28′. This radius gives us the sea coast near Moreton Bay, and an approach to the mountain flora of the table land. The tract is well watered by rivers, and enriched by that dense vegetation known as river scrubs. We thus have considerable tracts of marshy ground both fresh and salt, and though we include no mountain range of any height above a thousand feet, yet there are hills and rises sufficient to give a dry soil with the diversified flora we might expect upon elevated ridges. In the scrubs we have a moisture and deep shade which in this climate is favorable to the growth of any tropical plant, and the range of the temperature and the rainfall are all favorable to the growth of any plant which would flourish in a much warmer latitude. The annual rainfall is about 51 inches. The mean temperature 75° F. maximum in shade 104°, minimum in shade 36°.

Before giving any of the results of the examination of the census which follows, it may be useful to make one or two observations. It should be borne in mind that a census refers only to orders, genera, and species, and takes no account of the prevalence of individuals. Thus an exceptional plant which is outside the usual features of the order and genus to which it belongs, may be a very rare plant, yet its peculiarities give a name and character to the flora, while a world-wide species which is common everywhere is not taken into account. And thus it is that very distinct botanical provinces may bear no marked peculiarity externally. A stranger from Europe would see nothing especially attracting his attention in the flora of Brisbane, except perhaps its luxuriance and verdure. He would see the fields and open spaces covered with grass, and the trees, except for their darker or richer foliage, not unlike what he had been accustomed to elsewhere. He would see the same weeds growing much in the same places, and in the same abundance that he saw around his own house, and unless he were a very close observer, he would hardly detect the peculiarities of some of the tropical stragglers. And this resemblance points to a remarkable fact that must be taken into account in estimating the Australian flora. We have both in genera and species a certain amount of world-wide forms, and these are for the most part species which are richest in individuals as well. If we were, for instance, to take away the grasses, ferns, sedges, and rushes, (*Junceæ*, &c.,) from the Brisbane flora, its connection with the floras of other parts of the world would seem very slight, but in the absence of such members of a flora, the aspect of the country would be a desert indeed. Take them all in all, therefore, our resemblances are greater than our differences, and this must limit our notions of the exclusive peculiarities of the Australian flora.

We must next enquire what are the peculiarities of this flora. I cannot do better in this matter than enumerate those stated by various *Orchideæ*, flowers sunk in the wood of some *Leptospermeæ*, pericarp of *Casuarina*, receptacle and inner staminodia of *Eupomatia*, stomata of *Proteaceæ*.

There are no natural orders restricted to Australia except *Tremandieæ*,* which though confined to this continent has much affinity with *Pittosporeæ* (through *Cheiranthera*), as well as *Polygaleæ*. But there are certain natural orders called Australian, not because they are restricted to Australia, but because they are best represented there, and rare elsewhere They are *Stackhousiæ*, containing only about 20 species, and of which representatives are found in N. Zealand, and the Philippine Islands; *Goodeniaceæ*, very closely allied to *Campanulaceæ* and *Lobeliaceæ; Stylidieæ*, the same; *Epacrideæ*, an order almost confined to Australia; those species found outside belonging to four of the 24 Australia genera, except one S. American species, and one or two from N. Caledonia, which might almost be referred to the Australians; and *Casnamiæ*, an order which has only a single genus. There are very few species which are not Australian. There are also two sections of *Juncaceæ*, which were regarded as orders by Hooker, *Xeroteæ* and *Aphyllantheæ*. There are other orders not strictly Australian, but which are largely developed on the Continent, and are more or less characteristic of its vegetation. These are *Dilleniaceæ*, *Rutaceæ*, *Proteaceæ*, *Restiaceæ*, *Thymeleæ*, *Droseraceæ*. Two other orders were included by Hooker, but they are only regarded as sections of *Amaryllideæ*, and *Sterculiaceæ*. With the exception of *Dilleniaceæ*, which after Australia abounds most in India, all the other orders are abundant in South Africa next to Australia.

We must remember however that these Australian features are developed more in the South-west part of the Continent than elsewhere, and that the Tropics contain them in the smallest proportion. Of the very Australian genera, only one (*Epacrideæ*) obtains its developement in the South-east, the rest have their maximum in the South-west.* None of those orders which are either peculiar to Australia, or have their greatest developement in Australia, or which are peculiarly characteristic of the continental flora; none of these have their maximum in the Tropics. But on the other hand in those large orders which are well represented in Australia, but which are not peculiar to it, we find the greatest number in the Tropics of the Continent.

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* *Brunoniaceæ* was also included by Hooker, but this as depending upon one species has been included as a very aberrant form of *Goodeniaceæ*.

These facts will prepare us for some of the facts which an examination of the Brisbane flora will manifest. We must remember that we are dealing with the least Australian portion of its flora, or rather the confines of the least Australian portion. Dr. Hooker in his essay, brings the tropical flora on the East side as far South as Brisbane, and on the West side, still lower. If it be understood by this that the majority of the species found thus:—Orders 93, Genera 394, (not including *Filices*) and species 1063. According to Baron von Mueller in the census published in the Proceedings of the Royal Society for 1874, the orders were about the same; the genera, including *Filices*, were raised in number to 501, and the species reduced to 979. The way to account for this discrepancy is to bear in mind that in the early appreciation of a flora many varieties are mistaken for species. The number of genera are much reduced by Mueller, but new discoveries have since been made of plants extending to Tasmania which were not supposed to exist there. We might say generally that the plants of Tasmania are about 1000, and the genera would average about two species to each or half the number of plants. This corresponds with what is generally known of islands. The total number of species seems to be invariably less than any given continental area of equal extent, and the number of genera in proportion to species is also relatively larger. I shall presently make a closer examination of the relations between the Tasmanian flora and that of Brisbane, but I will first try to point out the peculiarites of the latter, proceeding from orders to genera and species.

If we compare the natural orders in Australia, first we find according to Hooker, that the proportion which the largest Natural Orders bear to the flora of the whole world, gives us the following, arranged according to their numerical preponderance. *Compositæ, Leguminosæ, Gramineæ, Orchideæ.* In Brisbane we have the same orders, but in the following order *Leguminosæ, Gramineæ, Compositæ, Orchideæ.* For Australia generally, it is *Leguminosæ, Myrtaceæ, Proteaceæ, Compositæ.* This shows that the flora of Brisbane is more in union with the world-flora generally than with Australia—a result quite in harmony with the preceding conclusion, taken from its tropical character. Taking nine of the principal orders in their numerical order, from the flora of the world, we have the following:—*Compositæ, Leguminosæ Gramineæ, Orchideæ, Rubiaceæ, Euphorbiaceæ, Labiatæ, Myrtaceæ,* *Cyperaceæ.* For Australia it is *Leguminosæ, Myrtaceæ, Proteaceæ, Compositæ, Gramineæ, Cyperaceæ, Epacrideæ, Goodeniaceæ, Orchideæ.* Again we find that the Brisbane list is near to the world's flora, or a normal character, though as the list is extended we begin to see the evidence of an Australian character. The order is *Leguminosæ, Gramineæ, Compositæ, Orchideæ, Euphorbiaceæ, Liliaceæ, Cyperaceæ, Myrtaceæ, Rubiaceæ.* In the predominance of the *Liliaceæ* there is a feature of the African flora, but in no other point is there any resemblance. In the position of *Euphorbiaceæ* there is an Indian resemblance, but *Rubiaceæ* takes the second place in that flora.

These are of course only very rough and general estimates, but they begin to reveal the remarkable character of the flora of Brisbane. I will now give a list of eleven Natural Orders with the number of genera and species in each, including the ferns which are not included in any of Hooker's estimates, but which

		SPECIES.	GENERA.
10	Rubiaceæ	24	15
11	Rutaceæ	22	13
12	Epacrideæ	21	10
13	Proteaceæ	21	11

Let us now take the Tasmanian flora as a representative of the vegetation of South-east Australia :

		SPECIES.	GENERA.
6	Compositæ	106	28
5	Orchideæ	71	27
12	Epacrideæ	62	11
1	Leguminosæ	59	20
3	Cyperaceæ	56	14
4	Filices	49	23
2	Gramineæ	42	17
9	Liliaceæ	28	18
7	Myrtaceæ	26	8
13	Proteaceæ	23	12
11	Rutaceæ	18	5
10	Rubiaceæ	14	5
8	Euphorbiaceæ	10	9

Here the same orders have the position very much altered, and some cannot be considered so representative or characteristic as *Goodeniaceæ*, sp. 13, gen. 6; *Thymeleæ*, sp. 18, gen. 3 ; *Umbelliferæ*, sp. 21, gen. 12 ; *Scrophularinæ*, sp. 18, gen. 8 ; *Labiatæ*, sp. 14, gen. 8. The same orders at Brisbane are only poorly represented. *Goodeniaceæ* has sp. 11, gen. 5; *Thymeleæ*, sp. 4, gen. 2; *Umbelliferæ*, sp. 14, gen. 8 ; *Scrophularinæ*, sp. 8, gen. 7 ; *Labiatæ*, sp. 9, gen. 7. Some of all the preceding are introduced.

On the other hand we have the following unexceptionally common Indian orders represented in the Brisbane flora. *Anonaceæ* *Menispermeæ*, *Celastrineæ*, *Melastomaceæ*, *Araliaceæ*, *Myrsineæ*, *Acanthaceæ*, *Dioscorideæ*, which are entirely absent from the Tasmanian flora.

Turning now to the genera, we find that out of 1300 which are given by Hooker as the number for all Australia, about half are found in the Brisbane flora, which is a very large proportion. Between 500 and 600 of the whole Australian flora are endemic, but a much smaller portion are endemic in Brisbane. The proportion is about 20 per cent, while nearly half belong to genera which are found all over the world. The following table will show the generic character of the flora at one glance:

Genera found in Australia..	20 per cent.
Ditto ditto in Australia and Asia, ..	24 per cent.
Ditto ditto in Pacific	9½ per cent.
Ditto ditto in Australia and Africa ..	9½ per cent.
Ditto ditto in Australia and Madagascar	1 per cent.
Ditto ditto in America	6½ per cent.
Ditto ditto in New Zealand	5 per cent.
Ditto widely distributed	45 per cent.

Dampiera, *Helichrysum*, *Trichinum*.* Of these *Dryandra* (*Proteaceæ*) and *Trichinum* are not represented at all, and with the exception of *Acacia* and *Eucalyptus*, the rest are all poorly represented.

The following table will show the representative genera in the Brisbane flora :—

GENUS.	SP. IN BRISBANE.	TASMANIAN SP.
Panicum	21	0
Acacia	20	17
Cyperus	19	1
Eucalyptus	16	11
Dendrobium	11	1
Solanum	9	2
Polygonum	9	5
Carex	9	12
Leucopogon	8	9
Phyllanthus	8	2
Polypodium	8	4
Pteris	8	5
Loranthus	8	(?) 0
Pultenæa	8	13
Melaleuca	7	4
Andropogon	7	0
Persoonia	6	2
Lindsæa	6	1
Desmodium	6	1

If we compare some of these figures with the number of species of some of the same genera in S. Australia and S. West Australia according to Hooker, the result is very striking.

GENUS.	SP. IN W. AUSTRALIA.	SP. IN S.E. AUSTRALIA.
Acacia	99	133
Eucalyptus	46	55
Leucopogon	70	50

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* Some of these have 100 species in Australia, and none less than 50.

GENUS.	SP. IN W. AUSTRALIA.	SP. IN S.E. AUSTRALIA.
Pultenæa	15	50
Melaleuca	100	27
Persoonia	25	40

It must be remarked, however, that a great many changes will have to be made in Hooker's tables, especially with regard to the genera, as many which he regarded as confined to S.W. Australia, occur in the census subjoined for Brisbane. Of this *Jacksonia* and *Chorizema* are instances, and many others might be cited as common to S.E. and S.W. Australia.

In this essay I am gradually comparing the relations of the Brisbane flora, proceeding from the general to the particular, and hitherto the comparison, as far as orders and genera are concerned, can only be regarded as a very general and rough perhaps 460 species, and occurring abundantly in every country in the world, this peculiarity is only seen in the two species of *Bedfordia*, and in South-east Australia and Tasmania only. Sometimes, however, genera appear in very isolated positions with reference to the main body of its congeners. We have instances of this in many orders, but more commonly in those less highly organized, as the phrase is, though the lower organization is not very evident. Such instances are not numerous enough to affect the general result.

We come now to the estimate of the species. These may be divided, first into species which are common to New South Wales and Queensland. Of such the flora includes about one-third of its whole number. But in this estimate some of those plants are included which extend into the tropics as well, and some which are not much more than on the Northern confines of the neighbouring colonies. A very much smaller proportion, about 12⅓ per cent. extend into the island of Tasmania, and all of these extend into the colony of Victoria as well. There are some which extend into Victoria and not into Tasmania; these form about 10½ per cent of the whole. A few are found in South Australia and not in either Victoria or Tasmania, but the number is very small, and when such instances do occur they are always found on the Northern or almost tropical boundaries of the remote colony and not near the coast. It must be remembered that the flora of Eastern Australia is very different according to the side of the dividing range on which the estimate is made. If on the coast side, it is of a character more in unison with the flora of Brisbane, and possesses features which are maintained to a certain extent with Tasmania and Victoria, south of the great divide. It is in these features that the per centage of species common to the four colonies are found. The flora of the west side of the divide is more or less of a desert character, especially as we proceed further from the watershed. The Brisbane flora has very few representatives of this part of the continent, or rather it should be said, has very few species which extend so far inland, and these are the only direct points of contact between it and the South Australian flora. There are however about 12 per cent of species which are found in all the colonies as far even as Western Australia. It is only in such instances that there is anything in common between the flora of Brisbane and that of West Australia. The plants are common in all Australia. Sometimes they are common all over the world as well, but sometimes they are typical Australian species, but found in every part of the continent. There is no instance of a typical West Australian species in the Brisbane flora.

About eight per cent of the Brisbane plants are common and widely distributed over the globe, but this estimate includes the introduced plants. Some of these are equally widely spread in Australia, but not all, because some are Asiatic or African weeds

Pacific species occur to the extent of a fraction over six per cent. The localities are various. New Caledonia is probably the island which furnishes the largest number of species, though some are found in the islands near the North-east Coast. There is a smaller number of species common to New Zealand and Brisbane : in all not quite five per cent. Considering the immense distance between the two places and the amount of sea which intervenes, it is an astonishing thing that the per centage is so high.

In all these estimates it must be borne in mind that the widely spread species are to be found amongst the grasses, ferns, sedges, and rushes, and if these were eliminated from the calculation, the per centage of species which are common to Brisbane and other portions of the world, would be reduced one third for every place except other parts of Australia. Or in other words it is very largely in the grasses, sedges, rushes, and ferns that the flora of Brisbane has any representatives outside the continent. If moreover, we were to remove the common weeds and introduced plants the isolation of the Brisbane flora from all except Australia would be much more complete, and though its resemblances (generic) would be many and wide, its actual specific union would be with the nearest portions of the Asiatic continent.

For comparison, it may be well to insert here Baron v. Mueller's valuable report on the tropical vegetation of Australia, from Gregory's exploration to the sources of the Victoria River, North Australia. It may be remembered that the Baron was the botanist to this expedition, and his report the most valuable we have yet on the vegetation of Northern Australia. He says,

1. "The various arboreous and shrubby clothing of the Eastern slopes of the Eastern Ranges, where numerous Indian genera of umbrageous trees are interspersed with Australian ; this, called, the "Brushwood" or Cedar country, further contains the most numerous representatives of the Polynesian and Malayan floras; together with *Cycas* 30 feet high, and various palms of the genera *Calamus*, *Areca*, *Caryota*, and *Livistona*.

2. The "Brigalow Scrub" extends over the elevated sandstone plains west of the Coast Range in East Australia, as far as Newcastle Range, (Lat. 18° to 20°). This is also a very varied vegetation, chiefly of small trees and shrubs of *Capparidæ*, *Pittosporidæ*, *Bauhiniæ*, *Sterculiaceæ*. Here *Delabechia* and *Brachychiton*, form a remarkably secondary feature; distinguished as the Bottle-tree Scrub, from their tumid trunks. This vegetation extends from the Burdekin to Upper Darling Rivers, and ceases somewhere about the Lower Barcoo country.

3. Open downs of basalt, nearly destitute of trees, except along the watercourses. The vegetation is chiefly herbaceous and much of it is annual; the soil is rich, and after the rains produces a luxuriant crop of excellent grass and herbaceous plants.

4. The desert presents various assemblages of plants according as the soil is saline, clay or sand, but the plants are almost the

of Moreton Bay. Of these Dr. Hooker says about 90 are found in Tasmania. The Brisbane flora which we may also call that of Moreton Bay, is however a littoral, or almost littoral one, and we should not consider it strictly as tropical as Dr. Hooker himself observes.

In the Brisbane flora we find about 4½ per cent of species which are peculiar to Queensland. They have not been found even on the confines of N.S. Wales, which it must be remembered is not 200 miles from Brisbane. This is rather a large per centage of endemic plants for such a locality.

The careful examinations of Mr. Bailey have added nearly 50 plants to the Brisbane flora, and about a dozen of these had not previously been found in Queensland.

It is not necessary for me to say anything about the introduced plants, as they have been ably dealt with in a preceding paper by Mr. Bailey himself. I may observe, however, that he quite agrees with me in thinking that the evidence of introduction is far from being well established in every case. *Verbena bonariensis* is a case in point. When the unfortunate Dr. Leichhardt started on his overland journey to Port Essington, this plant was so spread over some of the first country he explored, that he named it in consequence Vervain Plains. This may have spread from the settled districts, but only five or six years had elapsed since the Darling Downs had been inhabited by a very few settlers.

I should like to be able to add something about the useful qualities, either industrial or medicinal, of the Brisbane flora, but on this subject I have very little information. One of the most painstaking and industrious enquirers into this subject has been Dr. Bancroft. He has discovered the wonderful therapeutic properties of the *Duboisia myoporoides*, which bids fair to supersede Belladonna in medicine. The same indefatigable gentleman has made some interesting experiments on the various species of

Cassia around Brisbane, and has found that they are quite similar to Senna in their properties. *Macadamia ternifolia*, the Queensland nut, is really a valuable fruit. *Eugenia Smithii*, or Lillipilli, and *Melodorum Leichhardtii* are also fair eating. The latter goes by the name of the native banana, though it is very different from a banana, and in reality allied to the custard apple. *Citrus Australis* is also a passable native orange.

The flora of Brisbane contains many very elegant additions to the flower garden. No one who has made the journey from Moreton Bay to Ipswich, but must have been struck by the richness and luxuriance of the foliage, and the variety and beauty of the flowers which line the banks of the River Brisbane. *Castanospermum Australe*, with its lovely foliage, conspicuous flowers, and still more conspicuous pods; *Elæocarpus grandis* (the Queensland quandong), with its massive rounded heads of glossy botanists may take, if they wish to pursue the subject further. There are in the flora of Brisbane certain plants which do not occur in other parts of Australia where they are so accessible. They are so intimately connected with valuable trees or shrubs, that it would be most important to ascertain if they possessed the same useful characters. Thus in the order *Styracaceæ,* we have a species of *Symplocos*[*] (*S. spicata,* Roxb.), and all the members of the genus are valuable as dyes or teas. In the *Ebenaceæ* we have two species of ebony *(Diospyros)*[†] and as the black wood which bears the name is derived from several species, we may hope to find ebony in Australia. It should be remembered that the heart-wood is the only valuable portion, the outer or sap wood being soft and worthless. In the order *Sapotaceæ* we have four species of *Achras.* The fruits of many trees of this genus are eaten, and the bark of *A. sapota,* which grows in the West Indies, is considered equal to *Cinchona* as a febrifuge. It is a tree of this order (*Isonandra gutta,* Hook.) which yields the valuable gutta-percha of commerce. We have also a species of *Chrysophyllum,* a genus which yields the star apple of the West Indies. The remarkable gum which exudes from our *Achras Australis* is worth investigation. I can answer for its disagreeable tenacity when it gets about the hands. Amongst the *Ardisiads (Myrsinaceæ)* we have three genera. The whole are said to be more or less stimulating in their leaves, roots, or bark. Amongst the *Rubiaceæ* we have *Morinda,* many of the species of which yield a red dye. *Ixora* is said to have valuable medicinal qualities. Among the *Violaceæ* a good many species of *Ionidium* are emetic, and used as a remedy in *Elephantiasis.* Dr. Bancroft, of India, speaks favorably of it.[‡]

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[*] This genus is very variously placed by different authors.

[†] In the "Flora Australiensis" the Australian species are placed in R. Brown's genus *Cargillia,* because of the two ovules in each ovary cell.

[‡] See "Periera;" Vol. II., Part 2, p. 575. Also "Comp. Bot. Mag., 1, 278 Flora Medica.

The whole of the *Violaceæ* are said to have purgative and emetic qualities in their roots. I am almost afraid to refer to authors for this subject, they are so many; but I may especially cite an old work of Koebers, in praise of the Violet, *(Schediasma in landem Violæ purpureo-cæruleo,* 1667,) and *Pio De Viola specimen botanico-medicum,* Turin, 1813. Probably some also may have met Kite's "Medicinal Effects of the Resin of *Acaroides resinifera* (*Xanthorrhoea hastilis,* or grass tree) from Botany Bay," London, 1795; as well as Forster's work on "The Esculent Plants of the Islands of the Southern Ocean," Berlin, 1786; Villar's "Catalogue of Vegetable Substances which may serve to nourish Man," Grenoble, ann. 2, 8.

Amongst the *Nyctagineæ* we have *Boerhavia,* a genus which has emetic and cathartic properties in the roots of all the known species. *Pisonia,* of which we have one species, is supposed to possess the same properties. We have also among the ascertained very little beyond the names and external characters of the plants included in the following census, but it may be confidently said that its publication may do much to aid those who may hereafter apply themselves to ascertain the economic characters of the Brisbane flora.

A Census of the Flora of Brisbane.

By F. M. Bailey, F.L.S., &c., and the Rev. J. E. Tenison-Woods, F.L.S., F.G.S., &c.

This Census includes the plants of Moreton Island, and the country within 25 miles of the city of Brisbane.

After the specific names and the habitat and period of flowering, the figures which follow are meant to indicate where the plant is found elsewhere besides Brisbane. 1.—New South Wales. 2.—New South Wales and Victoria. 3.—New South Wales, Victoria and Tasmania. 4.—Generally distributed through East and West Australia. 5.—Extending into the tropics. 6.—Not previously found in Brisbane. 7.—Confined to Queensland. 8.—Found also in Asia. 9.—In Africa. 10.—America. 11.—The Pacific. 12.—Europe. 13.—New Zealand. 14.—Widely distributed throughout the world. And after the genera.—Aust.—Australia. Af.—Africa. Am.—America. Eu.—Europe. W.—Widely distributed. Trop.—Tropics. Subtr.—Subtropical. Warm.—The warmer regions of the globe. Pacif.—Pacific.

The name of the month denotes the flowering period, and fr. denotes the fruiting. An asterisk denotes an introduced plant.

Class DICOTYLEDONS.

Sub-Class *Polypetalæ*. *Series* 1. *Thalamifloræ*

Order.—RANUNCULACEÆ.

CLEMATIS, L., W. not tr.
glycinoides, DC., Brisbane River, Oct., 1. var. **mutica.**
microphylla, DC., Moreton Bay, Nov., 4.

RANUNCULUS, L., W. not tr.
lappaceus, Sm. round Brisbane, Oct., 4.
rivularis, Banks and Sol., waters about Brisbane, Oct.
parviflorus, L., Brisbane River, Sept., Oct., 4. var. **australis.**

DILLENIACEÆ.

HIBBERTIA, Andr., Australian.
stricta, R. Br., Ironbark forests about Brisbane, Oct., Nov., Dec., 4.
Billardieri, F.v.M., Brisbane River, Nov., 2.
acicularis, F.v.M., Moreton Bay, July, 3.

Leichhardtii, Benth., Brisbane River scrubs, Sept., fr. ripe Jany. It has a fair flavour and is called the native banana, 1.

Eupomatia, R. Br., Aust., 2 sp. only.
Bennettii, F.v.M., Enoggera scrubs, Aug., 7.
laurina, R. Br., Ennogera scrubs, Nov., 1.

MENISPERMACEÆ.

Pericampylus, Miers, Aust. 1 sp.
incanus, Miers, Oct., 1.

Sarcopetalum, F.v.M., Aust., 1 sp.
Harveyanum, F.v.M., Brisbane River, 2.

Stephania, Lour., tr., E. hemis.
hernandiæfolia, Walp., Taylor's Range, 3.

Pleogyne, Miers, Aust. 1 sp.
australis, Benth., 7.

NYMPHÆACEÆ.

Brasenia, Schreb., Aust., 1 sp.
peltata, Pursh., Kedron Brook, 7.

Nymphæa, L., W.
gigantea, Hook., 1 sp. Aust. Enoggera, fl. all summer, 1.

PAPAVERACEÆ.

Papaver, L., W.
*horridum, DC., Brisbane River, Sept., 2., 9.

***Argemone mexicana**, Tournf., introduced.

CRUCIFERÆ.

Cardamine, L., W., not tr.
hirsuta, L., Brisbane, Sept. to Dec., 4.

Nasturtium, R. Br., W.
palustre, DC., Brisbane River, Sept., 4.

Capsella, Mœnch., W., not tr.
didyma, Pers., Brisbane River, Sept., Oct.

Lepidium, L., W., temp. and subtrop.
ruderale, L., salt marshes Brisbane River, Oct., 4.

CAPPARIDÆ.

Polanisia, Rafin., W., trop.
viscosa, DC., Brisbane River, Nov., 5. 8. 9.

Capparis, L., W., trop.
lasiantha, R. Br., Brisbane River, Nov., 5.
sarmentosa, A. Cunn., Brisbane River, Oct., 7.
nobilis, F. v. M., Brisbane River, Nov. Dec., 1.

VIOLAREÆ.

Viola, L., W., not trop.

BILLARDIERA, Sm., Aust.
scandens, Sm., Doughboy Creek, Nov., 3.

TREMANDREÆ.

TETRATHECA, Sm., Aust.
thymifolia, Sm., near Brisbane, Feb. to May, 2.

POLYGALEÆ.

POLYGALA, L., W.
japonica, Houtt., 2.

COMESPERMA, Labill., Aust.
sphœrocarpum, Steetz., Taylor's Range, Jany., 1. 6.
retusum, Lab., Moreton Bay, 3.
ericinum, DC., Brisbane River, Nov., 3.

CARYOPHYLLEÆ.

SILENE, L., W., extra trop.
gallica, L., Brisbane River, Sept., 14.

CERASTIUM, L., W.
vulgatum, L., Brisbane River, Aug., 4.

STELLARIA, L., W.
media, L., Brisbane River, Aug., 14.

POLYCARPON, L., W.
tetraphyllum, L., fil., Brisbane River, Aug., Sept., 4.

PORTULACEÆ.

PORTULACA, L., trop., W.
oleracea, L., Brisbane River, Nov., Dec., Jany., 3.

ELATINEÆ.

ELATINE, Linn., W., temp. and subtr.
americana, Arn., Brisbane River, Nov., 3. 10. 11. 13.

HYPERICINEÆ.

Hypericum, L., W.
gramineum, Forst., Brisbane, Nov., Dec., 4. 11. 13.

MALVACEÆ.

Lavatera, L., old world, extra trop., Aust.
plebeia, Sims., 4.

Malva, L., W.
*rotundifolia, L., Brisbane River, Oct., Nov.
*verticillata, L., Brisbane, all summer.

Malvastrum, A. Gray, W.
spicatum, A. Gray, Brisbane River, Nov., 3.
tricuspidatum, A. Gray, Brisbane River, Nov. 1. 5.

Sida, L., W.
subspicata, F.v.M., Enoggera, Nov., 1. 5.
rhombifolia, L., Brisbane River, all summer, 1. 5.

discolor, F.v.M., Enoggera, Dec., 1. 5.
diversifolia, G. Don, Taylor's Range, Jany., 2.

Tarrietia, Blume, trop., Asia, Aust.
actinophylla, Blume, Enoggera scrubs, May, 6. 15. 8.
argyrodendron, F.v.M., Enoggera, May, 1.
trifoliata, F.v.M., Brisbane River, May, 15.

Rulingia, R. Br., Aust. Madagascar.
salvifolia, Benth., Brisbane River, Oct., Nov., 7.
pannosa, R. Bro., Enoggera, Oct., 2.

Commersonia, Forst., Am., trop. and Aust.
echinata, Forst., Enoggera, Nov., 1.

Keraudrenia, J. Gay, Aust.
Hillii, F.v.M., 1.
Hookeriana, Walp., 5. 7.

TILIACEÆ.

Grewia, L., trop., As., Af., Am.
latifolia, F.v.M., Taylor's Range, Nov., 7.

Corchorus, L., W., trop.
Cunninghamii, F. v. M., Enoggera, Nov. to March, 7.

Echinocarpus, Blume, Asia and trop. Aust.
australis, Benth., Moreton Bay, 1.

Elæocarpus, L., Asia, Pacif. N. Z.
obovatus, G. Don, Brisbane River, Sep., 1. 5.
cyaneus, Ait., Pine River, Nov., 2.
grandis, F.v.M., Brisbane River, April, fruit in Nov. This is the Queensland quandong. 7.

Series 2. *Discifloræ.*

LINEÆ.

Linum, L., W.
marginale, A. Cunn., Bremer River, Nov., 4.

ZYGOPHYLLEÆ.

Tribulus, L., W.
terrestris, L., Bremer River, Oct., 4.

GERANIACEÆ.

Geranium, L., W.
dissectum, L., Brisbane River, Nov. 4.

Erodium, L'Her.
cygnorum, Nees, Brisbane River, Sep., 14.

Oxalis, L., W.
corniculata, L., Brisbane River, most of the year, 4. 14.

RUTACEÆ.

Ziera, Sm., Aust.
lævigata, Sm., var. laxiflora, Moreton Bay, 1.
Smithii, Andr., Brisbane River, Nov., Dec., 3.

MEDICOSMA, Hook., f. Aust.
Cunninghamii, Hook., f., all summer, 1.

ZANTHOXYLON, L., W., trop.
brachyacanthum, F. v. M., Nov., 1.

GEIJERA, Schott., Aust.
salicifolia, Schott., Brisbane River, Oct., 1.
Muelleri, Benth., 7.

PENTACERAS, Hook., f., Aust.
australis, Hook., f., Brisbane River, Nov., 1.

ACRONYCHIA, Forst., Asia, trop., Pacif., Aust.
Baueri, Schott., Brisbane River, July, 1.
lævis, Forst., Brisbane River, Sept., 1.
imperforata, F. v. M., Brisbane River, Nov., 7.

MICROMELUM, Bl., Asia, trop., Pacif., Aust.
pubescens, Blume, Brisbane River, Nov., 7. 5.

CITRUS, L., Asia, trop.
australis, Planch., Brisbane River, Nov., 7.

MELIACEÆ.

TURRÆA. L., Asia, Af., Aust., trop.
pubescens, Hellen., Brisbane River, Aug., 5. 6.
MELIA, L., W., trop.
composita, Willd, Brisbane River, Oct., 1. 5.

DYSOXYLON, Blume, Asia trop. Aust., N. Z.
Muelleri, Benth., Brisbane River, Nov., 1.
rufum, Benth., Brisbane River, Nov., 1.

AMOORA, Roxb., Asia trop., Aust.
nitidula, Benth., Moreton Bay, 1.
SYNOUM, A. Juss., Aust.
glandulosum, A. Juss, Enoggera, July, 1.

CEDRELA, L., Asia, Aust., Am., trop.
toona, Roxb., Enoggera, Oct., 1.

Flindersia, R. Br., Aust., Mollucas.
  Schottiana, F. v. M., Brisbane River, Nov., 1.
  Oxleyana, F. v. M., Brisbane River, Sept. 7.
  Bennetiana, F. v. M., Moreton Bay, 1.

OLACINEÆ.

Olax, L., Asia, Af., trop., Aust.
  retusa, F. v. M., Moreton Bay, 7.
  stricta, R. Br., Moreton Bay, 1,

CELASTRINEÆ.

Celastrus, L., N. Am., E. Ind., Aust., Madagascar.
  australis, Harv. et Muell., Brisbane River, Nov., 2.
  dispermus, F. v. M., Enoggera, Sept., 7.
  Cunninghamii, F.v.M., Moreton Bay, 1. 5.

Denhamia, Meisn., Aust.

nitens, F. v. M., Brisbane River, April, 1.
acris, F. v. M., Brisbane River, Dec., 1.
clematidea, F. v. M., Enoggera, Sep., 1.
hypoglauca, F. v. M., Enoggera, Dec., 2.
opaca, F. v. M., Brisbane River, Sep., 7. 5.

SAPINDACEÆ.

Diploglottis, Hook. f., Aust.
  Cunninghami, Hook. f., Brisbane River, Aug., 1.

Cupania, L., Asia, Aust., Af., Am., trop.
  semiglauca, F.v.M., Brisbane River, Sept., 1.
  anacardioides, A. Rich., Brisbane River, May, 1. 5.
  serrata, F.v.M., Moreton Bay, 7.
  tomentella, F.v.M., Moreton Bay, 7.
  pseudorhus, A. Rich., Brisbane River, April, 1.
  xylocarpa, A. Cunn., Brisbane River, 1.
  nervosa, F.v.M., Brisbane River, Dec., 1.

Ratonia, DC., W., trop.,
  pyriformis, Benth., Brisbane River, April, 7.
  anodonta, Benth., Brisbane River, 7.
  tenax, Benth., Brisbane River, Oct., 7. 5.
  distylis, F.v.M., Brisbane River, Sept., 7. 5.

Atalaya, Blume, Aust., Timor.
  multiflora, Benth., 7. 5.
  hemiglauca, F.v.M., Brisbane River, 1. 5.

Nephelium, L., Indian Archipelago, Aust.
  connatum, F.v.M., Brisbane River, Sept., 7. 5.
  tomentosum, F.v.M., Brisbane River, Sept. 1.
  coriaceum, Benth., Brisbane River, 7.
  fovealatum, F.v.M., Brisbane River, 7.
  leiocarpum, F.v.M., Brisbane River, 1.
  divaricatum, F.v.M., Brisbane River, Nov., 7.

Harpullia, Roxb., Asia, trop., Aust., Madagascar.
  Hillii, F. v. M., Moreton Bay, 1.

pendula, Planch., Brisbane River, Oct., 1. 5.

Akania, Hook, f., Aust., subtr.
Hillii, Hook, f., Moreton Bay, 1.

Dodonæa, L., W.
triquetra, Andr., Brisbane River, Aug., 2.
viscosa, L., Enoggera, Aug., 4.
cuneata, Rudge, Enoggera, Aug., 2.

ANACARDIACEÆ.

Rhus, L., W., subtrop.
rhodanthema, F. v. M., Brisbane River, Aug., 1.

Euroschinus, Hook, f., Aust., trop.
falcatus, Hook, f., Taylor's Range, Nov., 1.

Series 3, Calyciflorœ.

corymbosa, Sm., Eight-mile Plains, Sept., 2., var. mimosoides 2. 1.
squarrosa, Sm., Brisbane River, Sept., Oct., 1., var. villifera, 7.
ulicina, Sm., Brisbane River, Oct., 3., var. angustifolia, 7.
genistifolia, A. Cunn., Moreton Bay.

Aotus, Sm., Aust.
villosa, Sm., Moreton Bay, Sept., 3.
lanigera, A. Cunn., Moreton Bay, Sept., 1.

Phyllota, DC., Aust., subtr. and trop.
phylicoides, Benth., Brisbane River, March, 1.

Pultenæa, Sm., Aust.
retusa, Sm., Brisbane River, Oct., 2.
myrtoides, A. Cunn., Brisbane River, Oct., 7.
petiolaris, A. Cun., Brisbane River, Oct., 7.
microphylla, Sieb., Brisbane River, Nov., 1., var. cuneata, 1.
ternata, F. v. M., Brisbane River, Sept., 2., var. cuspidata, 7.
echinula, Sieb., Brisbane River, 1.
villosa, Willd, Brisbane River, Oct., 2.
euchila, DC., Ipswich, 1.

Dillwynia, Sm., Aust., extra trop.
ericifolia, Sm., Moreton Bay, 3.
juniperina, Sieb., Moreton Bay, 2.

Bossiæa, A. Cunn., Aust.
rupicola, A. Cunn., Brisbane River, 1.
ensata, Sieb., Moreton Bay, 2.

Hovea, R. Br., Aust.
heterophylla, A. Cunn., Brisbane River, Oct., 3.
longifolia, R. Br., Ipswich, 3.
acutifolia, A. Cunn., Brisbane River, Oct., 7.

Crotalaria, L., W., warm regions.
linifolia, Linn., f., Brisbane River, Sept., 1. 5.
Mitchellii, Benth., Brisbane River, Oct., 1. 5.

trifoliastrum, Willd, Taylor's Range, Oct., 1. 5.
incana, L., Brisbane River, Dec., 7. 14.

MEDICAGO, L., W.
*denticulata, Willd, Brisbane River, Aug., Sep., Oct.

MELILOTUS, L., W.
*parviflora.

TRIFOLIUM, L., W., extra trop. About 280 described species, of which about 150 are true species.
repens, L., Brisbane River, Sept.

LOTUS, L., W.
australis, Andr., Moreton Bay, Oct., 4.

PSORALEA, L., W. About 100 species.
tenax, Lindl., Brisbane River, Oct., 1.

INDIGOFERA, Linn., W., warm regions.

ÆSCHYNOMENE, L., W., warm regions.
falcata, DC., Taylor's Range, Nov., 7. 5.

ZORNIA, Gmel., W.
diphylla, Pers., Brisbane River, Nov., Dec., 1. 5.

DESMODIUM, Desv., W., warm regions.
brachypodum, A. Gray, Brisbane River, Sept., 1.
varians, Endl., Brisbane River, Sept., Oct., 3.
rhytidophyllum, F. v. M., Taylor's Range, Oct., 1.
nemorosum, F. v. M., Enoggera, Sept., 7.
polycarpum, DC., Brisbane River, Oct., 7.
parvifolium, DC., Enoggera, Sept., 5. 7.

URARIA, Desv., Asia, Af., Aust., trop.
lagopoides, DC., Enoggera, Sept., 7. 5.

LESPEDIZA, Mich., N. Am., Asia, trop , Aust.
cuneata, G. Don., Brisbane River, 2. 15.

VICIA, L., W.,
*sativa, L. This and the followed one escapes from cultivation.
*hirsuta, Koch.

GLYCINE, L., Af., Asia, trop., Aust.
clandestina, Wendl., Taylor's Range, Oct., 4.
tabacina, Benth., Taylor's Range, Oct., 4.

HARDENBERGIA, Benth., Aust.
monophylla, Benth., Brisbane River, Nov., 3.

KENNEDYA, Vent., Aust.
rubicunda, Vent., Enoggera, Oct., 2.

ERYTHRINA, L., W., warm regions.
vespertilio, Benth., Brisbane River, Nov., 7. 5.

MUCUNA, Adams, W., warm regions.
gigantea, DC., Brisbane River, Sept., 1. 5.

GALACTIA, R. Br., W.
tenuiflora, Willd., Brisbane River, 1. 5.

CANAVALIA, DC., W., trop. and subtrop.
    obtusifolia, Brisbane River, Sept., 1. 5.

PHASEOLUS, L., W., warm regions.
    psoraleoides, U. and A., Brisbane River, Nov.

VIGNA, Savi., W., warm regions.
    vexillata, Benth., Brisbane River, Sept., Oct., 1. 5.
    lutea, A. Gray, Brisbane River, Sept., 1. 5.

RHYNCHOSIA, Lour., W., warm regions.
    minima, Brisbane River, Oct., 1. 5. 14.
    australis, Benth., Brisbane River, Oct., 1. 5.

FLEMINGIA, Roxb., Asia, Af., Aust., trop.
    parviflora, Benth., Brisbane River, Oct., 7. 5.

LONCHOCARPUS, H. B. et R., Am., Af., Aust., trop.
    Blackii, Benth., Brisbane River, Nov., 1.

DERRIS, Lour., Asia, Am., Aust., trop.

concinna, Benth., Enoggera, Nov., 1. 5.
mimosoides, L., Brisbane River, Sep., 1. 5.

Neptunia, Lour., W., trop.
gracilis, Benth., 1. 5.

Acacia, Willd., Am., Af., Asia, warm regions, Aust.

Division *Phyllodineæ.*

juniperina, Willd., Taylor's Range, Sept., 3.
pugioniformis, Wendl., Moreton Bay, 1.
bruniades, A. Cunn., Brisbane River, 7.
fasciculifera, F v M, Moreton Bay, 1.
falcata, Willd., Taylor's Range, Sept., Oct., 1.
penninervis, Sieb., High land near Brisbane, Sep., 3.
suaevolens, Willd., Moreton Bay, 3.
linifolia, Willd., Brisbane River, Sept., 1.
podalyriafolia, A. Cunn., Brisbane River, Aug., 7.
amblygona, A. Cunn., Moreton Bay, 1.
implexa, Benth., Brisbane River, Sept., 1.
complanata, A. Cunn., Dec., April, 1.
longifolia, Willd., Brisbane River, Aug., 3.
doratoxylon, A. Cunn., Moreton Bay, 1. 5.
glaucescens, Willd., Moreton Bay, 1.
Cunninghami, Hook, Brisbane River, Sept., 1.
aulocarpa, A. Cunn., Brisbane River, Oct., 7. 5.,

Division *Bipinnata.*

spectabilis, A. Cunn., Brisbane River, Aug., 1.
polybotrya, Benth., Ipswich, Aug., 1.
decurrens, Willd., Brisbane River, August, 2., var. pauciglandulosa, 1.

Albizza, Duraz, Asia, Africa, Aust. trop., and W. A.
*Lebbeck, Benth, Brisbane River, Nov.

Pithecolobium, Mart., W., warm regions.
pruinosum, Benth., Brisbane River, Nov., 1.

ROSACEÆ.

Rubus, L., W.
- moluccanus, L., Taylor's Range, Nov., 3. 8.
- parvifolius, L., Taylor's Range, Oct., 3. 8.
- rosæfolius, Sm., Brisbane River, Sept., 3. 8. 9.

SAXIFRAGEÆ.

Abrophyllum, Hook, f., Aust.
- ornans, Hook, f., Enoggera, Oct., 1. 15.

Aphanopetalum, Eddl., Aust.
- resinosum, Endl., Enoggera, Sept., 1.

Weinmannia, L., Indian Archipelago, Aust., Pacif.
- lachnocarpa, F.v.M., Enoggera, April, 7. 15.

CRASSULACEÆ.

Tillæa, L., W.

Myriophyllum, L., water plant, W.,
    variafolium, Hook, f., Brisbane River, Nov., 4. 15.
    verrucosum, Lindl., Brisbane River, Nov., 4. 5.
    latifolium, F.v.M., Brisbane River, Oct., 1. 6. 15.
    gracile, Benth., Kedron Brook, Nov., 7.

Ceratophyllum, L., W.

This genus is placed by Bentham and Hooker amongst the Monochlomidæ.

demersum, L., Brisbane River, Nov., 17. 14.

Callitriche, L., W.
    verna. L., Brisbane River, Nov., 4. 14.

RHIZOPHOREÆ.

Brugiera, Lam., tropics.
    Rheedii, Blume, Brisbane River, Nov., 7. 5. 8.

MYRTACEÆ.

Homoranthus, A. Cunn., Aust.
    virgatus, A. Cunn., Moreton Bay, Sept., 1.

Bæckea, L., Aust., Pacif., Indian Archipelago.
    stenophylla, F.v.M., Moreton Bay, 7.
    virgata, Andr., Enoggera, Sept., 2. 11.

Leptospermum, Forst., Indian Archipelago, Aust., Pacific.
    flavescens, Sm., Brisbane River, August, 3.
    stellatum, Cav., Brisbane River, Oct.
    scoparium, Forst., Moreton Bay, 1.
    myrtifolium, Sieb., Moreton Bay, 1.

Callistemon, R. Br., Australia.
    lanceolatus, DC., Brisbane River, Oct., 1., 5.
    salignus, DC., Brisbane River, Oct., 3.

Melaleuca, L., Aust., Pacific, Indian Archipelago.
    hypericifolia, Sm., Ipswich, Oct., 1. 15,

thymifolia, Sm., Logan Road, Oct., 1.
linariifolia, Sm., Brisbane River, Nov., 1.
leucadendron, L., Brisbane River, Nov., 1. 5. 8.
genistifolia, Sm., Brisbane River, Sept., 1. 5.
nodosa, Sm., Brisbane River, Oct., 1.
ericifolia, Sm., Brisbane River, Oct., 3.

ANGOPHORA, Cav., Aust.
subvelutina, F.v.M., Taylor's Range, Dec., 1.
lanceolata, Cav., Taylor's Range, Jany., 1.

EUCALYPTUS, L'Her., Aust., Indian Archipelago.
pilularis, Sm., Logan, 2.
melanophloia, F.v.M., Bremer, Nov. 1.
resinifera, Sm., Ipswich Road, Nov., 1.
trachyphloia, F.v.M., Taylor's Range, Nov., 7.

Backhousia, Hook and Harv., Aust. et trop.
myrtifolia, Hook and Harv., Enoggera, Dec., 1.
citriodora, F.v.M., Moreton Bay, 7.

Rhodomyrtus, DC., Aust., Indian Archipelago.
psidioides, Benth., Enoggera, August, 1.

Myrtus, L., W., but not in tropics.
rhytisperma, F.v.M., Brisbane River, 1.
gonoclada, F.v.M., Brisbane River, 7.
acmenoides, F.v.M., Brisbane River, 1.
fragrantissima, F.v.M., 1.
Hillii, Benth., Enoggera, 7.
tenuifolia, Moreton Bay, 1.

Rhodamnia, Sach., Asia and Aust., trop.
trinervia, Blume, Enoggera, Sept., 1.
argentea, Benth., Enoggera, 1.

Nelitris, Gærtn., Asia and Aust., trop.
panniculata, Lindl., Enoggera, Nov., 7. 5. 8.

Eugenia, L., Asia, Af., Aust., trop. and subtrop.
Smithii, Poir, Brisbane River, Sept., 2. 5.
Ventenatii, Benth., Enoggera, Nov., 1. 5.
myrtifolia, Sims, Enoggera, Nov., 1. 5.

MELASTOMACEÆ.

Melastoma, L., Asia, Aust., Pacif., trop.
malabathricum, L., Brisbane River, Dec., 1. 5. 8.

LYTHRARIEÆ.

Lithrum, L., W.
salicaria, L., Brisbane River, Nov., 3.

ONAGRARIEÆ.

Œnothera, L., Am., Aust.
*rosea, Willd., Brisbane River, Sept.

JUSSIÆA, L., W., trop.
  repens, L., Brisbane River, Sept., 2.
  suffruticosa, L., Brisbane River, Nov., 1. 5.

SAMYDACEÆ.

CASEARIA, Jacq., Asia, Af., Am., Aust.
  esculenta, Roxb., Brisbane River, 8.

PASSIFLOREÆ.

PASSIFLORA, L., W., trop.
  Herbertiana, Lindl., Brisbane River, June, Sept., 1.
  Banksii, Benth., Brisbane River, Dec., 7. 5.

CUCURBITACEÆ.

TRICHOSANTHES, L., Asia, Aust., trop.

MOLLUGO, L., warm regions of the world.
spergula, L., Brisbane River, Sept., Nov., 2. 5. 14.

UMBELLIFERÆ.

HYDROCOTYLE, L., W.
vulgaris, L., Brisbane River, Sept., Oct., 2.
hirta, R. Br., Brisbane River, Sept., Oct., 4.
laxiflora, Brisbane River, Oct., 3.
tripartita, R. Br., Enoggera, Oct., Dec., 3.
asiatica, L., Enoggera, Sept., Nov., 4. 13. 8. 9. 10.

TRACHYMENE, Rudge, Aust., Pacific, Borneo.
incisa, Rudge, Brisbane River, Nov., Dec., 1.
procumbens, Benth., Enoggera, Nov., Jany., 7.

SIEBERA, Reichb., Aust.
ericoides, Benth., Moreton Bay, Oct., 2.

ACTINOTUS, Labill., Australia.
Helianthi, Labill., Moreton Bay, Nov., 1.

ERYNGIUM, L., W., South Africa excepted.
expansum, F.v.M., Brisbane River, Dec., 1.

APIUM, L., W.
australe, Thou., Brisbane River, 14. 13. 4.
leptophyllum, F.v.M., all summer, 1.

CRANTZIA, Nutt., Extrop., Am., Aust., N. Z.
lineata, Nutt., Brisbane River, August to Dec., 3.

DAUCUS, L., W.
brachiatus, Sieb., Brisbane River, Nov., 4. 13. 10.

ARALIACEÆ.

ASTROTICHE, DC., Aust.
floccosa, DC., Taylor's Range, Sept., 1.
longifolia, Benth., Moreton Bay, 1.

PANAX, L., Trop. Asia, Africa, Pacific, Aust., N. Z.
elegans, F.v.M., Brisbane River, Nov., 1.

CORNACEÆ.

Marlea, Roxb., Asia, Aust., Pacific, warm regions.
vitiensis, Benth., Brisbane River, Aug., var. tomentosa, 1. 11.

LORANTHACEÆ.

Loranthus, L., Am., Africa, Asia, trop. or subtrop.
alyxifolius, F.v.M., Enoggera, Sept., 1.
dityophlebus, F.v.M., Moreton Bay, 1.
quandang, Lindl., Moreton Bay, 4.
celastroides, Sieb., Brisbane River, Oct., 2.
longiflorus, Desr., Brisbane River, Nov., 15.
exocarpi, Behr., Brisbane River, Nov., 3.
linophyllus, Fengl., Brisbane River, Sep., 4. 8.
pendulus, Sieb., Brisbane River, March, 4.

Viscum, L., Asia, Africa, Temperate Europe.

IXORA, L., W., trop.
pavetta, Roxb., Brisbane River, Dec., 7. 5.

TIMONIUS, Rumph., Indian Archipelago, Aust., trop.
Rumphii, DC., Taylor's Range, Aug., 7. 5. 8.

HODGKINSONIA, F.v.M., Aust.
ovatiflora, F.v.M., Enoggera, Dec., 1.

PLECTRONIA, *(Canthium)* Leam., W., trop.
latifolium, F.v.M., Brisbane River, Nov., 1.
lucidum, Hook and Arn., Brisbane River, Dec. 7. 5. 11.
vaccinifolium, F.v.M., Brisbane River, Dec. to Feb., 1. 5.
coprosmoides, F.v.M., Brisbane River, Dec., 1. 5.

MORINDA, L., W., trop.
jasminoides, A. Cunn., Brisbane River, Sept., 7. 8. 11.
acutifolia, F.v.M., Enoggera, Sept., 7.

CÆLOSPERMUM, Blume, Indian Archipelago and Aust., trop.
panniculatum, F.v.M., Ithaca Creek, Nov., 1. 5.

PSYCOTRIA, L., W., trop.
loniceroides, Sieb., Brisbane River, Sept., 1.
daphnoides, A. Cunn., Brisbane River, Oct., 1. 5.

OPERCULARIA, Gærtn., Australia.
aspera, Gærtn., Brisbane River, Nov., 2.
hispida, Spreng, Brisbane River, Nov., 1.
diphylla, Gærtn., Brisbane River, Nov., 1.

POMAX, Soland., Aust.
umbellata, Soland, Enoggera, Sept., 3.

KNOXIA, L., Asia, trop.
corymbosa, Willd., Ithaca Creek, Oct., 7.

SPERMACOCE, L., Africa, Aust.
brachystema, R. Br., Brisbane River, Sept., 1. 5.
multicaulis, Benth., Brisbane River, Sept., 1. 5.

ASPERULA, L., old world, temperate regions.
guninifolia, F.v.M., Brisbane River, Oct., 5.
conferta, Hook, Ipswich, Oct., 3. 5.

GALIUM, L., W.
australe, DC., Enoggera, Nov., 3.

COMPOSITÆ.

SAUSSUREA, DC., W., (mountainous).
carthamoides, Benth., Brisbane River, Oct., 1. 8.

CENTAUREA, L., W., not Australia, except this species.
metilensis, L., Brisbane River, Nov., 4. 14.

CARDUUS, L., Europe, Asia, (W.), South Africa, Canary Islands.
*marianus, L., Brisbane River, Nov.

CNICUS, L., Eur., Asia, N. Af., Am., and a few in other places.
*lanceolatum, Scop., Bremer, Nov.

Conyza, L., W., trop. and subtrop.
viscidula, Wall, Brisbane River, Nov., 1.
ægyptiaca, Ait., Brisbane River, Nov., 7. 8. 9.

Calotis, R. Br., Aust.
dentex, R. Br., Brisbane River, March to Sept., 1. 5.
cuneifolia, R. Br., Brisbane River, Sept., 1. 5. 6.
lappulacea, Benth., Brisbane River, Nov.

Lagenophora, Cass., Australia, New Zealand, Asia, trop.
Billardieri, Cass., Brisbane River, Nov., 4. 8.
solenogyne, F.v.M., Brisbane River, Sept., 1.

Brachycome, Cass., Australia, New Zealand, Africa, 1.
microcarpa, F.v.M., Brisbane River, Sep., 1.

Pterocauton, Ell.
spicatus, Lab., Enoggera, Nov., 7. 5. 8. 11.
sphacelatus, Lab., Enoggera, Nov., 5. 3. 11.

Blumea, DC., Australia, Africa, Asia, warm regions.
hieracifolia, DC., Brisbane River, Oct., 7. 8. 5.
lacera, DC., Brisbane River, Oct., 7. 8. 5.

Epaltes, Less., America, Africa, Asia, Australia, trop.
*australis, Less, Brisbane River, Sept., 3. 5.

Xanthium, L., America.
*spinosum, L., Brisbane River, Nov. to Jany.

Siegesbeckia, L., W., warm regions.
orientalis, L., Brisbane River, Oct., 3. 5.

Eclipta, L., W., warm regions.
alba, Hassk., Brisbane River, Oct., 5. 14.
platyglossa, F.v.M., Brisbane River, Oct. to Jany, 3. 5.

Wedelia, Jacq., W., warm region.
biflora, DC., Brisbane River, Sept., 1. 5.
calendulacea, Taylor's Range, Sept., 7. 8.
spilanthoides, F.v.M., Taylor's Range, Sept., 1. 5.

Spilanthes, L., W., warm regions.
grandiflora, Turcz., Brisbane River, Nov., 1. 5.
Galinsoga, Cav., America, trop.
*parviflora, Cav., Brisbane River, all summer.

Bidens, L., W., warm region.
pilosa, L., Brisbane River, all summer, 3. 14.
bipinnata, L., Enoggera, all summer, 7. 5. 14.

Glossogyne, Cass., Asia, tropical Australia.
tenuifolia, Cass., Taylor's Range, Nov., 3. 5. 8. 11.

Tagetes, L., American, trop.
glandulifera, Schranck, Enoggera, Sept., 1.

Enhydra, Lour., W., warm regions.
paludosa, DC., Brisbane River, Nov., 1. 6. 8.
Cotula, Linn., W.
australis, Hook, Brisbane River, Sept., 4. 15. 13.

Erechthites, Rafin, America, Australia, New Zealand.
quadridentata, DC., Brisbane River, Nov., 4. 5.

Senecio, L., W., 900 species!
lautus, Forst., Brisbane River, Nov., 4. 13.

Cryptostemma, R. Br., Africa.
*calendulacea, R. Br., Brisbane River, Sept.

Picris, L., W.
hieracroides, L., Brisbane River, Sept., 4. 14.

Crepis, L., W.
japonica, Benth., Enoggera, Oct., 1. 5. 6. 8.

Sonchus, L., W.
oleraceus, L., Brisbane River, all summer, 4. 14.

STYLIDIÆ.

Stylidium, Sw., Asia, Tropics and Aust.
debile, F.v.M., Brisbane River, Nov., 1. 5.
capillare, R. Br., Brisbane River, Nov., 7. 6. 5.
graminfolium, Sw., Brisbane River, stony ridges, all summer.

GOODENOVIÆ.

Velleia, Sm., Aust.
spathulata, R. Br., Brisbane River, all summer, 1. 5.

Goodenia, Sm., Aust.
stelligera, R. Br., Moreton Bay, 1.
ovata, Sm., Moreton Bay, all summer, 3.
bellidifolia, Sm., Brisbane River, Nov., 1. 5.
hederacea, Sm., Brisbane River, Nov., 2.
rotundifolia, R. Br., Brisbane River, Nov., 1.
grandiflora, Sims., Taylor's Range, Aug., 1. 5.
panniculata, Sim., Kedron Brook, Sept., 2. 5.

Scævola, L., Pacific Islands, Asia, Australia, trop.
hispida, Cav., Eight-mile Plains, Nov., 2.

Dampiera, R. Br., Aust.
stricta, R. Br., Brisbane River, Nov., 3.

Brunonia, Sm., Aust.
australis, Eight-mile Plains, Oct., 4. 5.

CAMPANULACEÆ.

Lobelia, L., W., Europe med. and As. oc. excepted.
trigonocaulis, F.v.M., Enoggera Creek, Nov., 1.
gibbosa, Labill, Brisbane River, Nov., 4. 5.
stenophylla, Benth., Brisbane River, all summer, 1. 5.
purpurascens, R. Br., Brisbane River, all summer, 2.

Pratia, Gaudich, Asia, tropics, Australia, New Zealand, Am.
erecta, Gaudich, Brisbane River, Nov.

Wahlenbergia, Schrad, W., South Africa especially.
gracilis, A. DC., Brisbane River, all summer, 4. 5. 13. 8.

neoanglicus, F.v.M., Moreton Bay, 1.
juniperinum, R. Br., Brisbane River, Dec., 2.

Acrotiche, R. Br., Aust.
divaricata, R. Br., Moreton Bay, Nov.
aggregata, R. Br., Eight-mile Plains, Sept.

Monotoca, R. Br., Aust.
elliptica, R. Br., Moreton Bay, 3.
scoparia, R. Br., Brisbane River, Sept., 3.

Epacris, Cav., Australia, New Zealand.
obtusifolia, Sm., Moreton Bay, Sept., 3.
microphylla, R. Br., Moreton Bay, Sept., 3.

Lysinema, R. Br., Aust.
pungens, R. Br., Moreton Bay, 1.

Sprengelia, Sm., Aust.
poncelelia, F.v.M., Moreton Bay, 1.

PLUMBAGINEÆ.

Statice, L., W.
australis, Spreng, Moreton Bay, August, 2. 8. 11.

Plumbago, L., warm regions, W.
zeylanica, L., Brisbane River, Sept., Oct., 1. 5.

PRIMULACEÆ.

Anagalis, L., W.
*arvensis, L., Taylor's Range, Sept.

Samolus, L., W.
valerandi, L., Brisbane River, Oct., 2. 14.

MYRSINEÆ.

Samara, L., Asia, Africa, Australia, tropics, Pacif.
australiana, F.v.M., Taylor's Range, Sept., 1. 15.

MYRSINE, L., W., trop.
    campanulata, F.v.M., Taylor's Range, Aug., 7. 15.
    crassifolia, R. Br., Moreton Bay, 1. 5.
    variabilis, R. Br., Brisbane River, Sept., 2. 5.

ÆGICERAS, Gærtn., Asia, Australia, trop.
    majus, Gærtn., Brisbane River, Sept., Oct., 2. 5. 8. 11.

SAPOTACEÆ.

CHRYSOPHYLLUM, L., America, Africa, Asia, Australia, trop.
    pruniferum, F.v.M., Brisbane River, fruit ripe Nov., 1. 5.

ACHRAS, L., America, trop.
    myrsinoides, A. Cunn., Brisbane River, Oct., 1. 5.
    australis, R. Br., Enoggera, fruit ripe Nov., 1. 5.
    Pohlmaniana, F.v.M., Brisbane River, 7. 6.
    laurifolia, F.v,M., Brisbane River, Aug., 1. 5.

racemosum, F.v.M., Brisbane River, Oct., 7. 5.
lineare, R. Br., Brisbane River, Oct., 4. 5.
simplicifolium, Forst., Brisbane River, Nov., 1. 5. 11.
suavissimum, Lindl., Brisbane River, Nov., 1.

Olea, L., warm regions, old world.
panniculata, R. Br., Brisbane River, Oct., 1. 5. 11.

Notelæa, Vent., Australia, Canary Islands.
longiflora, Brisbane River, 2.
ovata, Eight-mile Plains, Sept., 15.

APOCYNEÆ.

Melodinus, Forst., Asia, Pacific, Australia, trop.
acutiflorus, F.v.M., Enoggera, Oct., 7.

Cerissa, L., Africa, Asia, Australia, trop.
ovata, R. Br., Brisbane River, Nov. to Dec., 1. 5.

Alyxia, R. Br., Asia. Australia, Pacific, Madagassar, trop.
ruscifolia, R. Br., Brisbane River, Oct., 1. 5.
var. pugioniformis.

Tabernæmontana, L., W., trop.
orientalis, R. Br., Brisbane River, Sept., 1. 5. 8., var. angustifolia.

Parsonsia, R. Br., Asia, tropics, Australia, New Zealand.
ventricosa, F.v.M., Enoggera, Oct. to Feb., 1.

Lyonsia, R. Br., Australia, Pacific.
lilacine F.v.M., Pine River, Oct., 1. 5.
reticulata, F.v.M., Brisbane River, Nov., 1. 5.

ASCLEPIADEÆ.

Secamone, R. Br., Africa, Asia, Australia, tropics, Madagascar.
elliptica, R. B., Brisbane River, Nov.

Sarcostemma, R. Br., Africa, Asia, Aust.
australe, R. Br., Moreton Bay, Nov., 1. 5. 8.

VINCETOXICUM, Mœnch, W., warm regions.
 carnosum, Benth., Moreton Bay, 1. 5.
 ovatum, Benth., Brisbane River, 7. 5.

TYLOPHORA, R. Br., Africa, Asia, Australia, Pacific, trop.
 floribunda, Benth., Pine River, Nov., 1. 6. 15.

MARSDENIA, R. Br., W., warm region.
 rostrata, R. Br., Breakfast Creek, Oct., 2. 5.
 Fraseri, Benth., Moreton Bay, 7.
 coronata, Benth., Brisbane River, 7.

GYMNEMA, R. Br., Africa, Asia, Australia, tropical and subtr.
 micradenia, Benth., Brisbane River, 7. 5.
 pleiadenia, F.v.M., Pine River, Nov., 7.

HOYA, R. Br., Asia, Australia, tropical and subtropical.
 australis, Brisbane River, Oct., 1. 5. 11.

BORAGINEÆ.

Cynoglossum, L.. W.
latifolium, R. Br., Enoggera, Sept., 2. 15.
australe, R. B., Brisbane River, Oct., 3. 15.

CONVOLVULACEÆ.

Ipomæa, L., W., Europe excepted; a vast genus.
hederacea, Jacq., Moreton Bay, 7. 5. 14.
plebeia, R. Br., Moreton Bay, 7. 5.
palmata, Forst., Brisbane River, all summer, 1. 5. 8. 9. 10.
purpurea, Roth., Brisbane River, all summer, 7. 5.
Quamoclit, L., Brisbane River, all summer, 7. 8. 5., doubtfully introduced.

Convolvulus, L., W.
erubescens, Sims, Brisbane River, all summer, 4. 5. 13.
marginatus, Spieng, Brisbane River, Sept., 3. 11. 13.

Evolvulus, L., W., warm regions.
alsinoides, L., Brisbane River, all summer, 4. 14.

Dichondra, Forst., W.
repens, Forst., Brisbane River, August, Sept., 4. 14.

Cuscuta, R. Br., W., warm regions.
australis, R. Br., Enoggera, Dec., 3. 5. 14.
*europea, L., Brisbane River, Dec., 14.

SOLANACEÆ.

Solanum, L., W., generally tropical; a vast genus.
stelligerum, Enoggera, Oct., 1. 5.
furfuraceum, R. Br., Enoggera, Oct., 7. 5.
aviculare, Forst., Brisbane River, Oct., 3. 13.
nigrum, L., Brisbane River, Sept., 4. 14.
*pseudo-capsicum, Brisbane River, Sept., 6. 15. 14.
verbascifolium, Ait., Brisbane River, Oct., 1. 5. 8. 10.
discolor, R. Br., Brisbane River, Oct., 7. 5.

densevestitum, F.v.M., Brisbane River, Oct., 1.
*sodomæum, L., Brisbane River, Nov., 14.

Nicandra, Gærtn, Peru.
*physalodes, Gærtn, Brisbane River, Nov., 15. 6. 14.

Physalis, L., Mexico.
*peruviana, L., Brisbane River, all summer, 4. 5. 10 11.

Lycium, L., W.
australe, Brisbane River, Dec., 1.

Datura, L., W.
*stramonium,

Nicotiana, L., America, Australia, Pacific.
suaveolens, Lehm., Enoggera, Nov., 4. 10.

Duboisia, R. Br., Australia, New Caledonia.
myoporoides, R. Br., Brisbane River, Nov., 1. 5. 11.

LENTIBULARIEÆ.

Utricularia, L., W.
flexuosa, Vahl., Brisbane River, Nov., 8.
exoleta, R. Br., Brisbane River, 1. 5. 6. 8.
pygmæa, R. Br., Brisbane River, Oct., 7. 5.
cyanea, R. Br., Brisbane River, Oct., 1. 5. 8.

BIGNONIACEÆ.

Tecoma, Juss., W., warm regions.
australis, R. Br., Brisbane River, Sept., 2. 5.
jasminoides, Lindl., Brisbane River, Sept., 1.

ACANTHACEÆ.

Thunbergia, L., f., Africa, Asia, Trop.
*alata, Boj., Brisbane River, all summer, 5. 6. 7. 9.

Hygrophila, R. Br., W., trop.
salicifolia, Nees, Brisbane River, Sept., 7. 5.

Ruellia, L., W., trop.
australis, R. Br., Brisbane River, Sept., 1. 5.

Justicia, L., W., warm regions.
procumbens, L., Brisbane River, Sept., 1. 5. 8. 9.
peploides, T. Anders., Brisbane River, Oct., 7. 8.
hygrophiloides, F.v.M., Enoggera, Oct., 5. 7.

Hypoestes, R. Br., Africa, Asia, Australia, generally trop.
floribunda, R. Br., Brisbane River, April.

Eranthemum, L., W., trop.
variabile, R. Br., Brisbane River, all summer, 1. 5., var. lineare, Brisbane River, Oct.

MYOPORINEÆ.

Myoporum, Banks and Sol., Asia, Australia, Pacific.
acuminatum, R. Br., Brisbane River, Sept., 4. 5., var. angustifolium.
debile, R. Br., Taylor's Range, Nov., 1. 5.

VERBENIACEÆ.

LANTANA, L., America, Africa, Asia, trop.
    *camara, L., Brisbane River, all summer.
    *selloviana, Lk., Brisbane River, all summer, 10.

LIPPIA, L., W., warm regions.
    nodiflora, Rich., Moreton Bay, Sept., 1. 5. 14.

VERBENA, L., America, one species, W.
    officinalis, L., Brisbane River, all summer, 2. 5. 14.
    bonariensis, L., Brisbane River, all summer, 1. 10.
    *venosa, Gill, Brisbane River, all summer, Nov.

CHLOANTHES, R. Br.
    parviflora, Walp., Eight-mile Plains, Sept., 1. 5. 6.

SPARTOTHAMNUS, A. Cunn., Aust.
    junceus, A. Cunn., Logan Road, Sept., 1. 5.

SALVIA, L., W.
  plebeia, R. Br., Enoggera, Nov., 2. 5. 8.
  *coccinea, L., Brisbane River, Sept., Dec.

ANISOMELES, R. Br., Asia and Australia.
  salvifolia, R. Br., Enoggera, Nov., 7. 5.

STACHYS, L., W.
  *arvensis, L., Brisbane River, August.

WESTRINGIA, Sm., Australia, extra-trop.
  eremicola, A. Cunn., Brisbane River, Oct.

TEUCRIUM, L., W.
  argutum, R. Br., Brisbane River, Sept., 1. 5.

AJUGA, L., W., except America.
  australis, R. Br., Brisbane River, Oct.
  genevensis, L., Brisbane River, Oct., 14.

PLANTAGINEÆ.

PLANTAGO, L., W.
  debilis, R. Br., Brisbane River, August, 2.
  varia, R. Br., Brisbane River, August, 4. 14.
  *lanceolata, L., Brisbane River, Sept.

Sub-class. Monochlamydeæ.

PHYTOLACCACEÆ.

MONOCOCCUS, F.v.M., Aust.
  echinophorus, F.v.M., Brisbane River, Dec., 1. 5

CONDONOCARPUS, A. Cunn., Aust.
  australis, A. Cunn., Brisbane River, ? 1.

CHENOPODIACEÆ.

RHAGODIA, R. Br., Aust.
  hastata, R. Br., Brisbane River, Dec., Jany., 2. 5.
  nutans, R. Br., Brisbane River, Dec., 2.

CHENOPODIUM, L., W.
murale, L., Enoggera, Dec., 5. 6. 14.
triangulare, R. Br., Brisbane River, Dec., 1.
*ambrosioides, L., Brisbane River, July, 4. 14.
carinatum, R. Br., Brisbane River, 4. 11. 13.

ATRIPLEX, L., W.
cinerea, Poir, Brisbane River, 4.
patula, L., Moreton Bay, 4. 14.

SALICORNIA, L., W.
australis, Soland., Moreton Bay, Jany., 4. 8. 9. 13.

SUÆDA, Forsk, W.
maritima, Dumort, Moreton Bay, 4. 14.

AMARANTACEÆ.

DEERINGIA, R. Br., Asia, Africa.

Brownii, Campd., Brisbane River, Nov., 3. 5.
*acetosella, L., Brisbane River, Jany., 14.

Polygonum, L., W.
aviculare, L., Brisbane River, Dec., 2. 6. 14.
plebeium, R. Br., Brisbane River, Dec., 2. 5. 8. 9.
*strigosum, R. Br., Brisbane River, Dec., 3. 5. 8.
minus, Huds., Brisbane River, Dec., 4. 14.
subsessile, R. Br., Nov., 3. 11.
lapathifolium, L., Nov., 3. 14.
lanigerum, R. Br., Brisbane River, Nov., 2. 5. 8. 9.
orientale, L., Brisbane River, Nov., 1. 5. 8.
attenuatum, R. Br., Brisbane River, Nov., 2. 5. 10.

Muhlenbeckia, Meissn., Australia, New Zealand, South America.
gracillima, Meissn., Brisbane River, Nov., 1. 5.

NYCTAGINEÆ.

Boerhaavia, L., W.
diffusa, L., Ipswich, Dec., 4. 8.

Pisonia, L , Australia, America, Asia, Africa, Pacific.
aculeata, L., Brisbane River, Dec., 1. 5. 14.

MONIMIACEÆ.

Daphnandra, Benth., Aust.
micrantha, Benth., Enoggera, August.

Mollinedia, R. and P., America, Aust.
Huegeliana, Tul., Enoggera, Sept., 1.

Kibara, Endl., Australia, Asia.
macrophylla, Benth., Enoggera, Sept., 1. 5.

LAURINEÆ.

Cryptocarya, R. Br., Asia, Africa, America.
obovata, R. Br., Brisbane River, 1. 5.
glaucescens, R. Br., Brisbane River, Sept., 1. 5.

triplinervis, R. Br., Brisbane River, Oct., 1. 5. 11. ?
australis, Benth., Brisbane River, Nov., 1. 5.

Endiandra, R. Br. Asia.
pubens, Meissn., Brisbane River, 1.

Litsæa, Juss., Asia, Australia.
dealbata, Nees, Brisbane River, August, var. rufa.

Cassytha, L., Australia, one exception, W.
paniculata, R. Br., Moreton Bay, 1. 13. ?
racemosa, Nees., Moreton Bay. This occurs also in West Australia; only a very rare distribution.
filiformis, L., Enoggera, Sept., 7. 5. 6.

Hernandia, L., W.
bivalvis, Benth., Brisbane River, Nov., 7.

PROTEACEÆ.

Grevillea, R. Br., Australia, one Pacific.
robusta, A. Cunn., Brisbane River, Sept., 1.
Hilliana, F.v.M., Moreton Bay, Nov., 1.

Hakea, Schrad, Australia.
saligna, Knt., Brisbane River, Sept., 1.

Lomatia, R. Br., South America, Australia.
silaifolia, R. Br., Eight-mile Plains, May and Sept., 1.

Stenocarpus, R. Br., Australia, Pacific.
sinuatus, Endl., Enoggera, Sept.
salignus, R. Br., Moreton Bay, Oct.

Banksia, L., f., Australia.
collina, R. Br., Kedron Brook, Oct., 2.
integrifolia, L.f., Brisbane River, Oct., var. paludosa, Moreton Bay.
latifolia, R. Br., Brisbane River, Nov., 1.
æmula, R. Br., Moreton Bay, Nov., 2.

THYMELEÆ.

Pimelea, Banks and Sol., Australia and New Zealand.
linifolia, Sm., Brisbane River, all summer, 2. 5.
pauciflora, R. Br., Brisbane River, Sept., 3.
altior, F.v.M., Brisbane River, Sept., 1. 5. ?

Wikstrœmia, Endl., Asia, Pacific.
indica, C. A. Mey, Brisbane River, Dec., 1. 5. 8. 11.

EUPHORBIACEÆ.

Euphorbia, L., W.
atoto, Forst., Moreton Bay, 1. 5. 8. 11.
Drummondii, Boiss, Brisbane River, Dec., 4. 5.
alsinæflora, Bailley, Brisbane River, Nov., 7. 6. 5.
Macgillivrayi, Bois., Enoggera, Nov., 1. 5.
eremophila, A. Cunn., Moreton Bay, Dec., 4. 5.
Poranthera, Rudge, Australia.
microphylla, Brogn., Brisbane, Dec., 4. 5.

Beyeria, Mig., Australia.
viscosa, Mig., Moreton Bay, 4.

Ricinocarpus, Desf., Australia.
pinifolius, Desf., Moreton Bay, 3.

Bertya, Planch.
pinifolia, Pl., Brisbane River, ? 7.

Monotaxis, Brogn., Australia.
macrophylla, Benth, Moreton Bay, 7.

Dissiliaria, F.v.M., Australia.
baloghioides, F.v.M., Enoggera, Feb., 7.

Petalostigma, F.v.M., Australia.
quadriloculare, F.v.M., Eight-mile Plain, Sept., 1. 5.

Phyllanthus, L., W., warm regions.
Ferdinandi, Muell., Brisbane River, Sept., 1. 5. 6.
thesioides, Benth, Brisbane River, Nov., 1.

Claoxylon, A. Juss., Asia, Africa, Australia.
australe, Bailley, Enoggera Creek, 1. 5.

Acalypha, L., W., tropical and sub-trop.
nemorum, F.v.M., Brisbane River, Sept., 1.
eremorum, Muell. Arg., Brisbane River, 7. 5.

Adriana, Gaud, Australia.
acerifolia, Hook, Moreton Bay, Nov., 3. 5.

Alchornea, Sw., W., trop.
ilicifolia, Muell. Arg., Brisbane River, Sept., 1. 5.

Tragia, L., W., tropical and subtrop.
novæ-hollandiæ, Muell. Arg., Brisbane River, 7. 5.

Mallotus, Lour., Asia, Africa, trop.
claoxyloides, Muell. Arg., Brisbane River, Nov., 1. 5.
philippinensis, Muell., Brisbane River, Sept., 1. 5. 8.
discolor, F.v.M., Enoggera, 1. 5.

Macaranga, Thou., Asia, Africa.
tanarius, Muell. Arg., Enoggera, Nov., 1. 5. 8.

Baloghia, Endl.
lucida, Endl., Ithaca Creek, Sept., 1. 5. 11.

Carumbium, Reinw., Asia, Pacific.
populifolium, Reinw., Enoggera, Sept., 1. 5. 8. 11.
stillingiæfolium, Bailley, Enoggera, Sept., 1.

Excæcaria, L., W., trop.
agallocha, L., Brisbane River, Nov., 1. 5. 8. 11. ?

URTICEÆ.

Celtis, L., W.
paniculata, Planch., Moreton Bay, 1. 5. 8.

Trema, Lour., W., tropical, subtrop.
aspera, Bl., Brisbane River, Sept., var. Bancroftii, 1. 5.

Aphananthe, Planch., Aust.
philippinensis, Planch., Brisbane River, Sept., 1. 5.

Ficus, L., W., tropical, subtrop.
  Cunninghami, Mig., Brisbane River, Sept., 7. 5. 8. ?
  macrophylla, Brisbane River, 1. 5.
  subglabra, F.v.M., Brisbane River.
  aspera, Brisbane River, 1.
  rubiginosa, Desf., Brisbane River.

Cudrania, Trec., Africa, Asia.
  javanensis, Trec., 1. 5. 8., var. Bancroftii.

Malaisia, Blanco, Australia, Asia, Pacif.
  tortuosa, Blanco, Brisbane River, Oct., 1. 5. 8. 11.

Pseudomorus, Bureau, Australia, Pacif.
  Brunoniana, Bur., Brisbane River, Oct., 1. 11. 5.

Elatostemma, Forst., W., tropical, subtrop.
  reticulatum, Wedd., Ithaca Creek, Dec., 1.

PIPERACEÆ.

Piper, L., W., trop.
novæ-hollandiæ, Mig., Brisbane River, Oct., 1. 5.

Peperomia, R. et Pav.
leptostachya, Hook., Brisbane River, Sept., 1. 5. 11.

ARISTOLOCHIACEÆ.

Aristolochia, L., W.
pubera, R. Br., Brisbane River, Nov., 1.

SANTALACEÆ.

Thesium, L., W.
australe, R. Br., Moreton Bay, 3. 8.

Choretrum, R. B., Aust.
Candollei, F.v.M., Moreton Bay, 1.

Leptomeria, R. Br., Aust.
acida, R. Br., Moreton Bay, 2.

Exocarpus, Labill, Asia.
latifolia, R. Br., Brisbane River, August, 1. 5. 8.
cupressiformis, Labil., Taylor's Range, June, 4.

Subclass. Pymnospermæ.

CONIFERÆ.

Frenela, Mirb., Pacif.
robusta, A. Cunn., Moreton Bay, Oct., 4., var. microcarpa, 1.
rhomboidea, Endl., Moreton Bay, 3.
Endlicheri, Parlat., Moreton Bay, 2.

Araucaria, Juss., America, Pacif.
Cunninghamii, Ait., Brisbane River, Nov., 1.

Podocarpus, L'Her., W., tropical and subtrop.
elata, R. Br., Enoggera, Auqust, 1. 5.

CYCADEÆ.

Macrozamia, Miq., Australia.
  Paulo-gulielmi, F.v.M., Brisbane River, 1.
  Miquelii, F.v.M., Taylor's Range, 7.

Class II. Monocotyledons.

HYDROCHARIDEÆ.

Hydrocharis, L., W.
  morsus-ranæ, L., Brisbane River, March, 7. 14.

Ottelia, Pers., Asia, Africa, America.
  ovaliflora, L. C. Rich., Brisbane River, Nov., 4.

Vallisneria, L., W.
  spiralis, L., Brisbane River, 3. 14.

Hydrilla, Rich., W.,

gracilicaule, F.v.M., Brisbane River, Nov., 1.
monophyllum, F.v.M., Brisbane River, Sept., 1.
linguiforme, Sw., Brisbane River, Oct., 1.
teretifolium, R. Br., Brisbane River, Sept., 1. 5.
Mortii, F.v.M., Brisbane River, April, 1. 6.

BOLBOPHYLLUM, Thou., (epiphytes) W.
aurantiaceum, F.v.M., Brisbane River, Sept., 1. 5.

TÆNIOPHYLLUM, Blume, (epiphytes) Asia.
Muelleri, Lindl., Enoggera, May, Sept., 7.

SARCHOCHILUS, R. Br., (epiphytes) Asia, Pacific.
divitiflorus, F.v.M., Brisbane River, Oct., 1. 6.
olivaceus, Lindl., Ithaca Creek, Sept., 1. 5.
Hillii, F.v.M., Brisbane River, Nov., 1. 5.

CLEISOSTOMA, Bl., (epiphytes) Asia.
tridentatum, Lindl., Brisbane River, Oct., 1.

SACCOLABIUM, Lindl., (epiphytes) Asia.
Hillii, F.v.M., Brisbane River, Nov., 1.

GEODORUM, Jacks, Asia.
pictum, Lindl., Moreton Bay, Nov., 1. 5.

DIPODIUM, R. Br., Asia, Pacific.
punctatum, R. Br., Taylor's Range, Nov., 3. 5.

CYMBIDIUM, R. Br., (epiphytes) W.
canaliculatum, R. Br., Brisbane River, Nov., 2. 5.
albuciflorum, F.v.M., Brisbane River, Oct., 7. 5.
suave, R. Br., Brisbane River, Oct., 1. 5.

PHAIUS, Lour., Asia.
grandifolius, Lour., Moreton Bay, Oct., var. Bemaysii.

CALANTHE, R. Br., Asia, Pacific, America.
veratrifolia, R. Br., Enoggera Creek, Nov., 1. 5. 8.

GALEOLA, Lour., Asia, Pacific.
cassythoides, Reich., f., Moreton Bay, 1.
foliata, F.v.M., Enoggera Creek, Feb., 1.

Gastrodia, R. Br., Asia. New Zealand.
sesamoides, R. Br., Moreton Bay, 3.

Spiranthes, Rich., W.
australis, Lindl., Brisbane River, Nov., 3. 13. 14.

Calochilus, R. Br., Aust.
campestris, R. Br., Moreton Bay, 3., var. grandiflora.
paludosus, R. Br., Cooper's Plains, Nov., 1. 6.

Thelymitra, Forst., Pacific.
ixioides, Sw., Brisbane River, Sept., 4.

Diuris, Sm., Aust.
alba, R. Br., Brisbane River, Nov., 1. 5.
aurea, Sm., Brisbane River, Sept., 1.

Cryptostylis, R. Br., Asia.
longifolia, R. Br., Brisbane River, Nov., 3.

Drakæa, Lindl., Aust.
irritabilis, Reichb., Brisbane River, August, 7. 5.

Acianthus. R. Br., Pacif.
fornicatus, R. Br., Brisbane River, 1. 5.

Eriochilus, R. Br., Aust.
autumnalis, R. Br., Kedron Brook, May, 3.

Cyrtostylis, R. Br., Pacific.
reniformis, R. Br., Brisbane River, ? 4. 5.

Caladenia, R. Br., Pacif.
carnea, R. Br., Brisbane River, June, 3., var. alba, flowers larger.
cærulia, R. Br., Brisbane River, June, 2.

Chiloglottis, R. Br., Pacif.
diphylla, R. Br., Enoggera Creek, August, 3.

Glossodia, R. Br., Aust.
major, R. Br., Brisbane River, July, 3.
minor, R. Br., Brisbane River, July, 2.

BURMANNIACEÆ.

Burmannia, L., W.
disticha, L., swamps, Brisbane River, April, 1. 5. 8. 6.

IRIDEÆ.

Patersonia, R. Br., Australia, extra trop.
sericea, R. Br., Brisbane River, Sept., 2. 5.
glabrata, R. Br., Brisbane River, Sept., 2.

Sisyrinchium, L., W., America.
*micranthum, Pav., about Brisbane, August.

AMARYLLIDEÆ.

Hæmodorum, Sm., Aust.
coccineum, R. Br., Brisbane River, Sept., 7. 5.
tenuifolium, A. Cunn., Moreton Bay, 1.

Curculigo, Gærtn., Asia, Africa.
  ensifolia, R. Br., Logan River, 1. 8. 11.

Hypoxis, L., Asia, Africa, America.
  hygrometrica, Labill., Moreton Bay, 3., var. pratensis, and var. elongata, 5.

Crinum, Linn., Africa, Asia.
  pedunculatum, R. Br., Brisbane River, Nov., 2.

Eurycles, Salis., Asia.
  Cunninghamii, Ait., Enoggera Creek, Nov., 7. 5.

DIOSCORIDEÆ.

Dioscorea, L., W., tropical and subtrop.
  transversa, R. Br., Brisbane River, Nov., 1. 5. 8.

LILIACEÆ.

Cordyline, Comm., W., warm regions.
terminalis, Kunth., Brisbane scrubs, 1. 5.

Anguillaria, Br., Aust.
dioica, R. Br., Brisbane River, Nov., 4. 5.

Iphigenia, Kunth., Asia, New Zealand.
indica, Kunth, Ironbark forests, Oct., 7. 5. 6. 8.

Kreysigia, Reichb., Aust.
multiflora, Reichb., Logan Road, 1.

Burchardia, R. Br., Aust.
umbellata, R. Br., Gympie Road, 2.

Bulbine, L., South Africa.
bubbosa, Haw., Logan Road, 3.
semibarbata, Haw., Logan Road, 4.

Thysanotus, R. Br., Aust.
tuberosus, R. Br., Taylor's Range, Oct., 4. 5.

Cæsia, R. Br., Africa.
parviflora, R. Br., 4.

Tricoryne, R. Br., Aust.
elatior, R. Br., very common, Sept., Oct., 4.

Arthropodium, R. Br., Australia, Pacif.
panniculatum, R. Br., 3.
dianellaceum, F.v.M., Brisbane River, 7.

Dichopogon, Kunth, Aust.
strictus, Baker, Brisbane River, 3.

Sowerbæa, Sm., Aust.
juncea, Sm., Gympie Road, Oct., 2.

Laxmannia, R. Br., Aust.
gracilis, R. Br., Ironbark forests, Oct., 2. 5.

PHILYDRACEÆ.

Philydrum, Banks, Australia, Asia.
lanuginosum, Banks, 2. 5. 8.

XYRIDEÆ.

Xyris, L., W., warm regions.
  complanata, R. Br., Brisbane River, 2. 5. 8.
  gracilis, R. Br., Brisbane River, 3.

COMMELYNACEÆ.

Commelyna, L., W., warm regions.
  cyanea, R. Br., Brisbane River, all summer, 1. 5.

Aneilema, R. Br., W., trop.
  acuminatum, R. Br., scrubs, all summer, 1. 5.
  biflorum, R. Br., scrubs, all summer, 1.
  gramineum, R. Br., open land, all summer, 1. 5.

Pollia, Thunb., Asia, Australia.
  macrophylla, Benth., Enoggera, 7.

PALMÆ

Calamus, L., Asia, Africa, trop.
Muelleri, Wendl., Logan Road, 1.

Kentia, Blume, Australia, Asia, Pacif.
monostachya, F.v.M., Gympie Road, 1. 5. 6.

Ptychosperma, Labill, Australia, Asia, Pacif.
Cunninghamii, Wendl., 1. 5.

Livistona, R. Br., Australia, Asia.
australis, Mart., Cabbage Tree Creek, 2. 5.

PANDANEÆ.

Pandanus, R. Br., W., trop.
pedunculatus, R. Br., coast, 1. 5.

AROIDEÆ.

Colocasia, Schott., W., warm regions.
macrorrhizæ, Schott., scrubs, everywhere, Oct., 8. 11. 1. 5.

Gymnostachys, R. Br., Aust.
anceps, R. Br., Brisbane River, Sept., 1. 5.

Pothos, L., Asia.
Loureiri, Hook, Pine River, 1. 5. 8.

TYPHACEÆ.

Typha, L,, W.
angustifolia, L., Brisbane River, 4. 14.

Sparangium, L., W.
angustifolium, R. Br., 2.

LEMNACEÆ.

Lemna, L., W.
minor, L., Ipswich Road, 4. 14.
oligorrhiza, Kurz., very common, 2. 8.

NAIADEÆ.

Triglochin, L., W.
striata, Ruiz. and Pav., Brisbane River, salt water, Oct., 4. 10. 13.
procera, R. Br., Doughboy Creek, Sept., Oct., 4. 5.
tuberosum, F.v.M., waters off Brisbane River, Sept., 7.
Maundii, F.v.M., Enoggera Creek, 1.

Potamogeton, L., W.
natans, Linn., Waters off Brisbane River, Oct., 4. 5. 14.
tenuicaulis, F.v.M., 7. 5. 8.
perfoliatus, L., Maggill Creek, Oct., 3. 14.
crispus, L., Tarampa Creek, 1. 5. 14.
obtusifolius, Mert. and Nock., about Brisbane, 3. 14.

Ruppia, L. W.
maritima, L., Moreton Bay.

RESTIO, L., Australia, South Africa, New Zealand.
  dimorphus, F.v.M., Moreton Bay, 1.
  gracilis, R. Br., Brisbane River, 1. and Tasmania.
  complanatus, R. Br., Brisbane River.
  tetraphyllus, Labill., Brisbane River, 3.

HYPOLÆNA, R. Br., South Africa, New Zealand.
  lateriflora, Benth., 3. 13.

CYPERACEÆ.

KYLLINGA, Rottb., W., warm regions.
  intermedia, R. Br., Brisbane River, 2. 5. 8. 11.
  monocephala, Rottb., Brisbane River, 1. 5. 8. 9. 10.
  cylindrica, Nees, Taylor's Range, 7. 8. 9. ?

CYPERUS, L., W., tropical regions generally.
  eragrostis, Vahl., Brisbane River, 2. 8. 9.
  globosus, All., Brisbane River, 10. 14.
  unioloides, R. Br., Brisbane River, 16. 8. 9. 10.
  polystachyus, Rottb., Brisbane River, 1. 5. 14.
  enervis, R. Br., Brisbane River, 1.
  lævis, R. Br., Brisbane River, 1. 6.
  difformis, L., Brisbane River, 2. 5. 14.
  tetraphyllus, R. Br., scrubs, Brisbane River, 1.
  Haspan, L., Brisbane River, 1. 5. 14.
  concinnus, R. Br., Taylor's Range, 2.
  fulvus, R. Br., Taylor's Range, 1. 5.
  pilosus, Vahl., Taylor's Range, 7. 8.
  distans, L. f., Brisbane River, 7. 14.
  rotundus, L., Brisbane River, 4. 5. 14.
  congestus, Vahl., Brisbane River, 4. 6. 9.
  lucidus, R. Br., Brisbane River, 3. 10. ?
  exaltatus, Retz., Brisbane River, 2. 8.
  Bowmanni, F.v.M., Brisbane River, 7. 5.
  umbellatus, Benth., 7. 5. 8. 9.

HELEOCHARIS, R. Br., W.
  sphacelata, R. Br., Brisbane River, 3. 13. 11.
  fistulosa, Schult., Brisbane River, 7. 6. 5. 14.
  cylindrostachys, Bæckel, Brisbane River, 1. 5.
  atropurpurea, Kunth, Brisbane River, 1. 5. 14.

FIMBRISTYLIS, Vahl., W.
  acuminata, Vahl., Brisbane River, 7. 5. 8.
  nutans, Vahl., Brisbane River, 1. 5. 8.
  polytrichoides, R. Br., Moreton Bay, 1. 5. 8.
  monostachya, Hassk., Taylor's Range, 1. 5. 14.
  dichotoma, Vahl., Moreton Bay, 1. 5. 14.
  diphylla, Vahl., Moreton Bay, 1. 5. 14.
  ferruginea, Vahl., Brisbane River, 1. 5. 14.
  microcarya, F.v.M., Kedron Brook, 7. 6. 5.

SCIRPUS, L., W.

SCHŒNUS, L., W.,
nitens, Hook, f., Moreton Bay, 4. 10. 13.
calostachyus, Benth., Moreton Bay, 1. 5.
scabripes, Benth., Moreton Bay, 7.
brevifolius, R. Br., Brisbane River, 4.
melanostachyus, R. Br., Brisbane River, 1., W. Aust. ?
vaginatus, F.v.M., Brisbane River, 1.
Brownii, Hook, F., Brisbane River, 3. 13.

MESOMELÆNA, Nees, Aust.
deusta, Benth., Kedron Brook, 1.

TRICOSTULARIA, Nees, Australia, Asia.
paludosa, Benth., Moreton Bay, 1.

LEPIDOSPERMA, Labill., Australia, Asia, New Zealand.
exaltatum, R. Br., Brisbane River, 4.
concavum, R. Br. Moreton Bay, 3. 5.
laterale, R. Br., Brisbane River, 3.

CLADIUM, P. Br., W.
articulatum, R. Br., Brisbane River, 4. 11. 13.
glomeratum, R. Br., Brisbane River, 4. 13.
teretifolium, R. Br., Brisbane River, 1. 13.
junceum, R. Br., Brisbane River, 4.

GAHNIA, Forst., New Zealand, Pacific, Asia.
aspera, Spreng, Brisbane scrubs, 1. 5. 11.
psittacorum, Labill, Brisbane River swamps, 3. 6.

CAUSTIS, R. Br., Aust.
flexuosa, R. Br., Moreton Bay, 2. 5.

SCLERIA, Berg., W.
laxa, R. Br., Brisbane River, 1. 5.
lithosperma, Willd., Brisbane River, 1. 5., var. linearis, Brisbane River, 7.
tesselata, Willd., Brisbane River, 7.
sphacelata, F.v.M., Brisbane River, 7.

Carex, L., W.
inversa, R. Br., Taylor's Range, 4. 13., var. major.
paniculata, L., Brisbane River, 4. 14.
declinata, Boott, Brisbane River, 1
gracilis, R. Br., Enoggera Creek, 1.
vulgaris, Fries, Kedron Brook, 3. 14. 13.
acuta, L., Moreton Bay, 2. 8. 10., Europe.
pumila, Thunb., Moreton Bay, 3. 13. 8. 10.
maculata, Boott, Brisbane River, 1. 8.
longifolia, R. Br., Brisbane River, 3.

GRAMINEÆ.

Paspalum, L., W.
scrobiculatum, L., Brisbane River, 1. 5. 8. 9.
distichum, L., Brisbane River, 2. 5. 14., var. littorale.
brevifolium, Flügge, Ironbark Forests, 1. 5. 8.

lachnophyllum, Benth., Brisbane River, 7.
bicolor, R. Br., Brisbane River, 1. 5.
melananthum, F.v.M., 2.
effusum, R. Br., Brisbane River, 1. 5.
Mitchelli, Benth., Brisbane River, 1. 5.
decompositum, R. Br., Brisbane River, 4. 8.
trachyrachis, Benth., Brisbane River, 7. 5.

Oplismenus, Beauv., W.
compositus, Beauv., Brisbane River, 1. 5. 14.
setarius, Rœm. and Schult., 2. 5. 14.

Setaria, Beauv., W.
glauca, Beauv., Brisbane River, 2. 5. 14.
macrostachya, H. B. and K., Brisbane River, 1. 5. 14.

Pennisetum, Rich., W.
compressum, R. Br., Brisbane River, 1. 8.

Cenchrus, L., W.
australis, R. Br., Brisbane River, 1.

Chamæraphis, R. Br., Australia, Asia.
spinescens, Poir, Brisbane River, often in water, 2. 5. 8.

Stenotaphrum, Trin., W.
americanum, Schranck, Brisbane River, 1. 5. 14.

Zoysia, Willd., Australia, Asia, New Zealand.
pungens, Willd., Moreton Bay, 3. 5. 8.

Lappago, Schreb., W.
racemosa, Willd., Brisbane River, 3. 14. 5.

Perotis, Ait., Asia, Africa.
rara, R. Br., Brisbane River, 7. 5. 8.

Hemarthria, R. Br., W.
compressa, R. Br., Brisbane River, 4. 5. 8.

Heteropogon, Pers., W.
contortus, Rœm et Schult., Brisbane River, 1. 5. 8.

ISCHÆMUM, L., Asia, Africa, America.
    triticeum, R. Br., Brisbane River, 1. 5.
    australe, R. Br., Brisbane River, 1. 5.
    pectinatum, Trin., Brisbane River, 7. 5. 8.
    laxum, R. Br., Brisbane River, 1. 5. 8. 9.

POLLINIA, Trin., Asia, Africa.
    fulva, Benth., Brisbane River, 4.

ANDROPOGON, L., W.
    sericeus, R. Br., Brisbane River, 4. 8. 11.
    affinis, R. Br., Brisbane River, 1. 5.
    pertusus, Wild., Brisbane River, 1. 8.
    intermedius, R. Br., Brisbane River, 4.
    bombycinus, R. Br., Brisbane River, 4.
    refractus, R. Br., Brisbane River, 2. 5.
    lachnatherus, Benth., Brisbane River, 1. 5.

ARISTIDA, L., W.
arenaria, Gaudich, Brisbane River, 4. 5.
leptopoda, Benth., 1. 5.
vagans, Cav., Brisbane River, 1. 5.
ramosa, R. Br., Brisbane River, 1. 5.

STIPA, Linn., W.
micrantha, Cavanilles, Brisbane River, 1. 5.
aristiglumis, F.v.M., 2.

DICHELACHNE, Endl., Australia, New Zealand.
crinita, Hook, f., Brisbane River, 4. 13.

DEYEUXIA, Clarion, W.
Fosteri, Kunth., Brisbane River, 4. 13.

HOLCUS, L., W.
lanatus, L., Brisbane River, 3. 14.

DANTHONIA, DC., W.
longifolia, R. Br., Brisbane River, 1.

ECHINOPOGON, Beauv., Australia, New Zealand.
ovatus, Beauv., Brisbane River, 4. 13.

PAPPOPHORUM, Schreb., Africa, America.
nigricans, R. Br., Brisbane River, 4. 5.

CYNODON, Pers., W.
dactylon, Per., Brisbane River, 4. 5. 14.

CHLORIS, L., W.
divaricata, R. Br., Brisbane River, 7. 5.
truncata, R. Br., Brisbane River, 1.
ventricosa, R. Br., Brisbane River, 2.

ELEUSINE, Gærtn., W., trop.
indica, Gærtn., 1. 5. 14.

LEPTOCHLOA, Beav., W., tropical and subtropical.
chinensis, Nees, Brisbane River, 1. 5. 8.

SPOROBOLUS, R. Br., W.
virginicus, Kunth., Salt marshes, Brisbane River, 4. 5. 14., var. pallida.
indicus, R. Br., Salt marshes, Brisbane River, 4. 5. 14., var. elongata.
diander, Beauv., Salt marshes, Brisbane River, 1. 8.

ISACHNE, R. Br., W., trop.
australis, R. Br., Brisbane River, 2. 8.

ECTROSIA, R. Br., Australia.
leporina, R. Br., Brisbane River, 7. 5.

PHRAGMITES, Trin., W.
communis, Trin., Brisbane River, 3. 5. 14.

ERAGROSTIS, Beauv., W.
pilosa, Beauv., Brisbane River, 2. 5. 14.

AGROPYRUM, Beauv., W.
scabrum, Beauv., Brisbane River, 4. 13.

LOLIUM, L., W.
temulentum, L., Brisbane River, 3. 6.

Class III. CRYPTOGAMIA.

LYCOPODIACEÆ.

LYCOPODIUM, L., W.
carolinianum, L., Moreton Bay, W. Aust., Tas., 8. 9. 10. 13.
laterale, R. Br., Moreton Bay, 2. 11. 13.

SELAGINELLA, Spring, W.
uliginosa, Spring, Moreton Bay, 3.
Belangeri, Spring, Brisbane River, 7. 5. 6.

AZOLLA, L., W.
rubra, R. Br., Brisbane River, 3. 13.

PSILOTUM, Swartz, W.
triquetrum, Swartz, Brisbane River, 1. 5. 14.

MARSILEACEÆ.

MARSILEA, L., W.
hirsuta, R. Br., Brisbane River, 2. 5.

FILICES.

OPHIOGLOSSUM, L., W.
vulgatum, L., Brisbane River, 3. 14.
pendulum, L., Brisbane River, 1. 8. 11.

BOTRYCHIUM, Swartz, W.
ternatum, Swartz, Brisbane River, 3. 8. 10. 13.

LYGODIUM, Swartz, W., trop.
scandens, Swartz, Brisbane River, 1. 5. 8. 9.

SCHIZÆA, Sm., W.
bifida, Swartz, Brisbane River, 3. 5. 15.
dichotoma, Swartz, Brisbane River, 1. 5. 8. 10. 11. 13.

CERATOPTERIS, Brogn., W.
thalcictroides, Brogn., 7. 5. 14.

GLEICHENIA, Sm., W.
circinata, Swartz, Brisbane River, 3. 5. 8. 11. 13.
dicarpa, R. Br., Brisbane River, 3. 5. 8. 11. 13.
flabellata, R. Br., Brisbane River, 3. 5. 11. 13.
dichotoma, Hook, Brisbane River, 1. 5. 14.

TODEA, Willd., Africa, Asia, Pacific, New Zealand.
barbara, T. Moore, Eight-mile Plain, 9. 13.

TRICHOMANES, L., W.
vitiense, Baker, Eight-mile Plain, 7. 11.
parvulum, Poir, Brisbane River, 7. 8. 11.

ALSOPHILA, R. Br., W.
australis, R. Br., Brisbane River, 3. 5. 11.

DICKSONIA, L'Aer., W.

CHEILANTHES, Swartz, W.
- tenuifolia, Swartz, Brisbane River, 4. 5. 8.
- Sieberi, Kunze, Brisbane River, 6. 8.

PTERIS, L., W.
- geraniifolia, Raddi, Brisbane River, 1. 5. 14.
- paradoxa, Baker, Brisbane River, 1. 5.
- falcata, R. Br., Brisbane River, 3. 8. 13., var. nana.
- longifolia, L., Brisbane River, 2. 5. 14.
- umbrosa, R. B., 3. 11. 13.
- tremula, R. Br., Brisbane River, 3. 11. 13.
- aquilina, L., var. esculenta, 4. 14.
- incisa, Thunb., Brisbane River, 3. 14. 6.

LOMARIA, Willd., W.
- capensis, Willd., Eight-mile Plains, 3. 5. 8. 10. 11. 13.

BLECHNUM, L., W.
- cartilagineum, Swartz, Brisbane River, 3. 5.
- serratulum, Rich., Eight-mile Plains, 1. 5. 10. 11.

DOODIA, R. Br., Asia, Pacific, New Zealand.
- aspera, R. Br., Eight-mile Plains, 2.
- caudata, R. Br., Eight-mile Plains, 5. 3. 13. 11.

ASPLENIUM, L., W.
- nidus, L., Brisbane River,
- attenuatum, R. Br., Brisbane River, 1.
- flabellifolium, Cav., 4. 13. 6.
- falcatum, Lam., 1. 5. 8. 9. 11. 13.
- umbrosum, J. Sm., Brisbane River, 3. 8. 9. 11. 13.

ASPIDIUM, Swartz, W.
- cordifolium, Swartz, Taylor's Range, 1. 5. 14.
- unitum, Swartz, Taylor's Range, 4. 8. 9.
- molle, Swartz, Taylor's Range, 1. 5. 8. 9. 11.
- decompositum, Spreng, Taylor's Range. 3. 11. 13.
- tenericaule, Thu., Taylor's Range, 1. 5. 8. 11.

POLYPODIUM, L., W.
tenellum, Forst., Taylor's Range, 1. 5. 11. 13.
punctatum, Thunb., Taylor's Range, 3. 14.
proliferum, Poir, Taylor's Range, 1. 5. 8. 9. 11.
serpens, Forst., Taylor's Range, 2. 11. 13.
confluens, R. Br., Taylor's Range, 1. 5. 11.
scandens, Forst., Enoggera Creek, 2. 13. 11.
rigidulum, Swartz, Enoggera Creek, 1. 5. 8. 12.
irioides, Poir, Moreton Bay, 7. 5. 8. 9. 11.

NOTHOLÆNA, R. Br., W.
distans, R. Br., Moreton Bay, 4. 11. 13.

ACROSTICHUM, L., W., trop.
aureum, L., Salt marshes, Brisbane River, 1. 5. 14.
spicatum, L., Enoggera Creek, 7. 8. 11.

DESCRIPTIONS OF AUSTRALIAN MICRO-LEPIDOPTERA.

BY E. MEYRICK, B.A.

II. CRAMBITES (Continued).

In the following paper, which may be regarded as supplementary to the one published in Vol. III., pp. 175 –216, I have described all the remaining species of the group yet known to me as occurring in this region, and have also been enabled to make a few corrections and additions, relative to the species previously described. Although these insects have been mostly collected within a limited area, and represent only a fractional part of the whole number of species of this group occurring in Australia, they are yet sufficiently numerous to warrant a few general remarks on the geographical distribution of that section of the Lepidoptera of which they are representatives.

The most remarkable point to be noticed is the almost universal generic identity of the Australian species of *Crambites* with European types; but except in the case of imported species, no specific identity, and very rarely any close specific resemblance exists. The species yet described fall under 22 genera; of these two are represented by imported species only, three are also Asiatic or American, one endemic, and the remaining 16 genera are all European, and generally more or less cosmopolitan. This peculiarity becomes more remarkable if we contrast the *Crambites* with some of the principal families of *Tineina*, standing lower in the scale of development; in these (as will be shown in subsequent papers) only the larger and more dominant genera of Europe are represented, the great majority of species belonging to endemic genera. Thus taking for comparison the *Gelechidæ*, a family which, like the *Crambites*, is distributed with remarkable evenness over the whole world, an analysis of the materials at present obtained shows that out of 68 genera, containing over 200 species, only 14 genera, represented by 48 species, are common to Europe and Australia; whilst in the *Œcophoridæ*, a family which here attains its maximum of development, we find that out of about 35 genera, with 220 species, only three genera are shared with Europe. The persistence of generic types in the case of the *Crambites* is therefore an exceptional circumstance, and in conjunction with their universal distribution must be taken to indicate an origin very remote in time, and a character little liable to be influenced by external circumstances.

The only case of close specific resemblance to a European species is that of *Etiella Behrii*, *Z.*, which is closely allied to *E. zinckenella*, *Tr.*, a species which possesses the (for a Phycite) extraordinarily wide range of Europe, Africa, and America. The *Micro-Lepidoptera* have as yet been so little studied outside the European region, that no profitable comparison with other faunas

I had indeed suspected this at one time, but having a number of males of one form, and a number of females of the other, without the corresponding sexes, taken under the same circumstances, they were assumed to belong to the same species, the differences being such as usually indicate the sexes in this genus. Since then the other sex of each species has turned up, so that no further doubt exists. The name *parramattellus* must be retained for the male described. The female of this species is similar in all respects, but generally more suffused with fuscous.

Chil. leptogrammellus, n. sp.

Described in Vol. III., p. 178, as *Chil. parramattellus*, female; the description need not therefore be repeated here. The male is rather larger than the female, (12″-12½″), with broader and less acute fore-wings; in other points similar.

Taken at Sydney and Parramatta, in December, and again in February and March.

Chil. (?) schistellus, n. sp.

♀. 15.″ Head whitish. Labial palpi 2½ times as long as head, denselyscaled, dark fuscous-grey, above mixed with whitish, beneath white at base. Maxillary palpi rather short, whitish, at base fuscous-grey. Antennæ dark fuscous. Thorax dark fuscous-grey, mixed with whitish on back, becoming white posteriorly. Abdomen stout, white; anus compressed, truncate, ovipositor elongate-conical. Legs dark fuscous-grey; tarsi tinged with ochreous. Fore-wings elongate-oblong, broad; costa gently arched; apex obtuse; hind-margin strongly rounded, oblique; dark fuscous-grey, becoming much paler towards inner margin; costa slenderly white from base to apex, the white colour tending to be shortly produced along the costal vein-branches; a broad central white streak from base to hind-margin along median vein, attenuated basally, near hind-margin becoming double, the branches separated by a short, slender, dark fuscous streak; from its lower edge beyond middle are indications only of commencement of two other branches; between median streak and costa are two elongate, white streaks, starting in confluence from a point just beyond middle, becoming wider, and running near-together to hind-margin; a hind-marginal row of seven black dots, alternating with the white streaks; cilia fuscous-grey, base and tips suffused with whitish. Hind-wings white, apex infuscated, hind-marginal line dark fuscous, interrupted; cilia white, with fuscous parting-line, only distinct round apex.

One female on the Parramatta River, in December. This hardly appears to be a true *Chilo*, but the female shows no generic point of difference, except in the more rounded wings, and abnormal crambideous markings; possibly the male may possess more definite characters.

Differs from other species of the genus by the absence of a white streak, and generally by the shorter palpi, broad white space before hind-margin, and acute tooth of the second striga. From Tasmania." *Z. loc. cit.*

(*Prionophora ruptella*, P.L.S., N.S. Wales, Vol. III., p. 179.

The discovery of the larva of this species has revealed the totally unexpected fact that this insect belongs to the *Geometrina*, the larva being a twelve-legged looper, feeding on *casuarina*. The pupa is abnormally shaped, elongate-cylindrical. The imago is quite abnormal amongst *Geometræ*, and I cannot conceive to what species it is allied; its long palpi and elongate fore-wings give it a very singular appearance in the group. It is fortunate that I have been able to correct the very natural error of Walker and myself.)

CRAMBUS, *F.*

Cr. apicistrigellus, n. sp.

7‴-8‴. Head brownish-ochreous. Labial palpi in male 2¼, in female 2½ times as long as head, dark fuscous, whitish beneath towards base. Maxillary palpi dark fuscous, mixed with lighter. Antennæ whitish-grey, in male thickened, dentate, finely ciliated, in female simple. Thorax ochreous-brown. Abdomen whitish-ochreous-grey, in male with elongate attenuated anal tuft, in female with short conical ovipositor. Legs white, anterior pair sometimes suffused with pale grey above. Fore-wings elongate, in male moderately broad, costa nearly straight, hind-margin oblique, slightly rounded, indented a litile below apex; in female narrower, with costa straighter; dark ochreous-brown, more or less strongly irrorated with dark fuscous; three short outwardly oblique white streaks from costa, first two between ⅓ and ⅔, extremely oblique, almost coincident with costa, acute, separated by a narrow dark fuscous line, third less oblique from four-fifths of costa nearly to hind-margin a little below apex, attenuated posteriorly; a small irregular oval white apical spot; a white central streak from base to ¾ of disc, at first narrow, rapidly dilated, upper edge straight, lower edge twice toothed obliquely inwards, apex more oblique than hind-margin, indented in middle; sometimes this streak reappears on hind-margin as a laterally-suffused blotch; second line visible from extremity of third costal streak to anal angle, slender, blackish, five times very acutely angulated inwards; in female the whole of the markings are lost except the white costal streaks, the rest of the wing being unicolorous: cilia white, tips and sometimes almost the whole, suffused with dark fuscous, and the dark fuscous parting-line near base, very strongly marked round apex of wing. Hind-wings pale fuscous-grey; cilia whitish, with faint-grey parting-line.

Intermediate in general character between the groups of *Cr. candiellus*, *Hs.* and *pratellus*, *L.*, but narrower-winged than any palpi 2⅓ times as long as head, attenuated, fuscous, above and beneath narrowly white. Maxillary palpi, white, at base fuscous. Antennæ dark fuscous, subdentate, finely ciliated. Thorax ochreous-brown, with a small white spot behind, and two slender white posteriorly confluent longitudinal streaks on each side. Abdomen dull whitish-yellow. Anterior and middle legs fuscous, tibiae with central suffused whitish bands, tarsi with broad whitish rings at apex of joints; posterior legs yellow-whitish, tarsi suffused with fuscous towards base of joints. Fore-wings broad, subtriangular, costa hardly arched, hind-margin obliquely truncate, waved above and below middle, suddenly rounded beneath; dark fuscous, tinged with ochreous, but with all the scales white at base, causing an appearance of alternate lines, with numerous irregular white markings; a white central streak from base to just beyond middle of disc, at first narrow, expanded to ⅓ of disc, thence acute-pointed, including a central similar streak of ground-colour; from middle of its lower edge it sends a white streak along fold to just beyond middle, whence, becoming broader, it is extremely acutely angulated back to inner margin at ⅓, along which it is continued to base; a short outwardly oblique white streak from costa at two-fifths, before which is a short white partial streak along costa; an elongate oblique-transverse curved white discal spot, margined with black, at ⅔ of disc, its lower angle pointing to anal angle of wing; above this is a subquadrate oblique white costal spot, only separated from discal spot by its black margin; subterminal line white, commencing as a strong inwardly oblique streak from costa a little before apex, bent outwards a little below costa, thence slenderer and often broken, gently curving down to anal angle; immediately before this is a transverse row of eight lanceolate white spots, costal one broadest, ovate, eighth elongate, above inner margin; a cloudy white streak on inner margin from ⅓ to ⅔; a short crooked oblique white subapical streak, and three semi-ovate, clear white, hind-marginal spots, one in centre of hind-margin, and two adjacent just above anal angle, all margined above and below with black; hind-marginal line blackish; cilia pale grey-fuscous, with a dark central line, and chequered with three double, whitish, squares, alternating with the white hind-marginal spots. Hind-wings pale ochreous-yellow, apex slightly infuscated; hind-marginal line cloudy fuscous; cilia pale ochreous-yellow.

♀ 10‴. Smaller and paler than male, white markings broader and more suffused, labial palpi proportionately shorter, antennæ simple; abdomen and hind-wings dull white, apex of hind-wings infuscated.

Nearly allied to *pleniferellus*, *Walker*, from which it differs by the hind-wings being ochreous-yellow in male, white in female, whilst in *pleniferellus* they are grey in both sexes; and also by the differently arranged markings of fore-wings. In shape of wing and other respects this insect is evidently allied to the group of

Cr. relatalis, Walker.

Mr. Raynor found this species very common in Tasmania early in January, round Hobart Town and Launceston; probably it occurs throughout the island.

Cr. grammellus, Z., Cr. 46.

"Palpis longis, alis anticis subelongatis, acutis, margine postico obliquo rotundato; pallidissime ochraceis, vena mediana incrassata nivea nitidula ramum longissimum inferius exserente, vitta lutea eam superius marginante in alae apicem perducta, strigula venae transversae lineolisque marginis postici fuscis, ciliis niveis. ♂"

Allied to the group of *relatalis, Walker,* and *opulentellus, Z.,* in which it is readily distinguished by the single branch of the median streak, and pure white cilia. Habitat given doubtfully as Australia, but probably correctly.

Cr. perlatalis, Walker, Cat. 174.

12‴-13‴. Head greyish-ochreous; a frontal line, a line over each eye, and a spot behind antennæ whitish. Labial palpi fully thrice as long as head, greyish-ochreous mixed with darker, internally whitish, beneath white at base. Maxiliary palpi greyish-ochreous, with a few whitish scales. Antennæ dark fuscous, in male rather thickened, very finely ciliated. Thorax brownish-ochreous, on back suffused with fuscous grey, with a rather broad white longitudinal line on each side of back, confluent behind. Abdomen ochreous-whitish, towards base suffused with smoky-grey. Legs dark greyish-ochreous, tarsi wholly suffused with dark fuscous. Fore-wings moderately elongate, rather strongly dilated, costa nearly straight, apex subacute, hind-margin distinctly sinuate below apex, very strongly rounded off beneath; whitish-ochreous, tinged with grey; a slender white costal streak from very near base to about ⅔, leaving extreme costal edge of groundcolour; a discal white streak, beginning very acutely at one-fifth from base, widening gradually until three-fifths, where it is abruptly furcate, the upper branch moderately broad, hardly attenuated, running to costa just before apex, the lower branch constricted at base, becoming broader and more suffused, running straight to middle of hind-margin; above this lower branch are three, and beneath it two wedge-shaped white marks on hind-margin between adjacent veins, variable in size, sometimes very small, sometimes large and almost confluent, those nearest the branch always largest, connected at base by a white streak along hind-margin; a rather narrow white streak from base along lowest branch of submedian vein to anal angle, slightly bent at three-fifths, posteriorly often indistinct; a small white spot on inner margin at base; cilia ochreous-whitish, basally rather darker, with faint central parting line. Hind-wings pale fuscous grey, more whitish towards base; cilia whitish, with faint grey parting-line.

Intermediate between *relatalis*, *Wlk.* and *opulentellus*, *Z.*; differs from all the allied species except *grammellus*, *Z.*, by the

This species, of which Zeller's first specimen came from Adelaide, appears to be certainly distinct from any species which I have seen. Subsequently (Hor. Soc. Ross. 1877, p. 58) he mentions having seen a second specimen in all respects similar to the first. He describes it as closely allied to *opulentellus*, *Z.*, but distinguished especially by the costal white streak reaching base, the thickened branches of median streak, and the partial confluence of the second and third branches. In the two former points it agrees well with *enneagrammos*, but differs by the yellowish maxillary palpi, and union of second and third branches of median vein, with partial obsolescence of second, nor has Zeller mentioned any white triangle above the median streak. None of the very numerous specimens of *enneagrammos* which I have seen from Victoria, New South Wales and Tasmania, possess either of these characteristics.

In addition to the *Crambi* described here and previously, Walker gives in his catalogue five other descriptions, which I have not thought deserving of inclusion in the list, but of which a brief notice may be useful. The description of *Cr. ramostriellus*, Cat. 172, is hardly intelligible, and almost certainly unidentifiable, unless it is synonymous with the succeeding *relatalis*. *Demissalis*, *vetustellus*, and *delatalis*, Cat. 176, are no doubt *Crambi* of the *perlellus* group, but may possibly be all synonymous; the first two are from Western Australia, the third from Queensland. *Ochraceellus*, Cat. 177, from Sydney, is of dubious character; it seems improbable that so conspicuous a *Crambus* could occur here at all commonly (Walker's specimens were sent by three different collectors) without being found in any one of the local collections I have seen.

ARGYRIA, *Hb.*, (CATHARYLLA, *Z.*)

Characters of *Crambus*, except that the labial palpi are relatively shorter, generally not longer than head and half thorax; from *Eromene*, which it resembles in the shorter palpi, it differs by the absence of the transparent spot at base of hind-wings in male. From both it is removed by the white, sometimes fasciated, fore-wings. The genus is distributed through nearly all warm countries, excepting Europe.

Arg. argyraspis, n. sp.

6″-8″. ♂ ♀. Head snow-white, with an orange spot behind each eye. Labial palpi rather more than twice as long as head, gradually attenuated, snow-white above, orange-ochreous beneath. Maxillary palpi white, at base ochreous. Antennæ orange-ochreous, annulated with white, in male rather thickened, subdentate. Thorax shining snow-white, with a rather broad ochreous-orange longitudinal line on each side of back. Abdomen ochreous-whitish. Legs whitish, anterior and middle tibiae, and all tarsi bright ochreous-orange above. Fore-wings triangular, very broad posteriorly, costa almost straight, hind-margin truncate, very slightly oblique, anal angle hardly obtuse; shining snowwings with hind-margin twice slightly emarginate or indented below apex; hind-wings with basal pecten.

A small, recently defined, genus, distinguished especially by the two indentations below apex of fore-wings. The only other species known besides the Australian are from South America.

To this genus, and not to *Eromene* should be referred the species described in Vol. III., p. 198-199, as *praematurella* and *dilatella*, which I now, from the examination of further specimens, consider to be merely the spring and summer broods of the same rather variable insect, for which the name *praematnrella* must be retained. It is common, but local, in marshy places near Sydney, from October to February. It is very similar to the South American species, but differs by the possession of usually eight hind-marginal spots, instead of three.

PHYCIDÆ.

NEPHOPTERYX, *Z.*,

Neph. euraphella, n. sp.

9‴. ♀. Head silvery-grey, mixed with dark fuscous. Palpi arched, ascending, attenuated, hardly reaching forehead, whitish-grey, densely mixed with blackish-fuscous. Antennae grey. Thorax silvery-grey, densely mixed with blackish-fuscous. Abdomen silvery-grey, suffused with dark fuscous, except on apical rings of segments. Legs dark slaty-fuscous, irrorated with whitish; tarsi dark fuscous with whitish rings at apex of joints; posterior tibiae with an oblique rather broad blackish ring a little before apex. Fore-wings elongate, narrowed at base, costa bent in middle, thence parrallel to inner margin, apex rounded, hind-margin obliquely rounded; pale grey, irregularly irrorated with darker grey and dark fuscous scales, the darker scales predominating along costa and hind-margin, and more narrowly along inner-margin; along fold and beneath costa the ground-colour is mixed with whitish; first line from ⅓ of costa to two-fifths of inner margin, straight, moderately oblique, rather broad and strongly marked, black; second line from about five-sixths of costa nearly to anal angle, rather slender, black, bordered externally with whitish, angulated sharply inwards below costa, and again obtusely at ⅓ above inner margin; an irregularly crescentic black spot on disc at ⅔, a little below costa, beneath which the dark scales of ground-colour form an obsolete dark shade, resting on inner margin: cilia pale fuscous-grey, indistinctly shaded with darker. Hind-wings almost wholly transparent, suffused with pale-grey posteriorly; hind-margin very narrowly clouded with darker fuscous-grey; cilia pale grey, darker round apex, with cloudy darker parting-line.

The male being unknown, the species may not perhaps be a true Nephopteryx. It is intermediate in breath of wing between *stenopterella* and *opimella*, and cannot possibly be confused with either; *stenopterella* has straight porrected palpi, and *opimella* chestnut-brown, externally suffused; upper half of second line barely indicated with blackish scales, sharply angulated at ⅓ from costa; a row of several ill-defined spots of black scales on hind-margin; cilia pale grey, with whitish points. Hind-wings whitish-grey, subhyaline, hind-marginal line dark fuscous, suffused; cilia whitish, with fuscous-grey parting-line.

Of this species also the male is not known; it is however certainly allied to *euraphella*, with which it also agrees in general habit, but may be readily known by its central dark band, and the absence of the strongly-marked first and second lines.

One female received from neighbourhood of Duaringa, Queensland taken by Mr. G. Barnard.

Neph. fornacella, n. sp.

7″. ♀. Head, palpi, antennæ, and thorax, dark grey; palpi obliquely ascending, reaching not much above head. Abdomen dark iridescent ochreous-grey. Legs ochreous-whitish, irrorated with dark fuscous, tarsi dark fuscous with whitish-ochreous rings at apex of joints. Fore-wings elongate, narrow, costa gently arched, hind-margin obliquely rounded; dull grey, clouded with darker. along costa rather broadly sprinkled with whitish; first and second lines obscurely darker grey; first line angulated above middle; second line double, near hind-margin, sending a short acute angulation obliquely inwards a little below costa; discal spot rather large, single, cloudy, transverse; cilia dark grey. Hind-wings deep golden-fulvous; cilia greyish-fulvous, with indistinct darker parting-line.

Tolerably nearly allied to *stenopterella*, which it resembles in shape, size, and general markings, but differs by the ascending palpi and golden-fulvous hind-wings.

Two females taken at light, Parramatta, late in February.

Considerable dissimilarity exists between the five hitherto described Australian species of *Nephopteryx*, but the variation is analogous to that which occurs amongst the European species. Thus *opimella* closely resembles in form the short-winged European *vacciniella, Z.*; *euraphella* and *infusella* have the general figure of *genistella, Dup.;* whilst the narrow-winged *stenopterella* and *fornacella* bear much similarity to *Metzneri, Z.*, to which indeed *stenopterella* seems rather nearly allied.

PEMPELIA, *Hb.*

Pemp. melanostyla, n. sp.

10″. ♀. Head grey-whitish, mixed with darker. Palpi hardly longer than head, obliquely ascending, terminal joint horizontal; whitish above, blackish beneath. Antennæ filiform, blackish. Thorax whitish-grey, coarsely irrorated with blackish. Abdomen dark iridescent grey; sides, apical rings of segments, and anal tuft pearly whitish. Legs whitish; anterior pair, and all tarsi

Pemp. strigiferella, Vol. III., p. 202.

In my description hardly sufficient latitude is allowed for the extreme variation of this changeable species. The males vary greatly in intensity of marking; sometimes all markings, even the characteristic subapical streak, are almost obsolete, and the entire insect is nearly uniform pale greyish-ochreous. The female, when in fine condition, which is rarely the case, usually shows the first and second lines clearly marked, much more so than in male, and is sometimes much suffused with smoky fuscous.

The species appears to be especially (perhaps wholly) a coast insect, occurring abundantly along the sea-line from Newcastle to Kiama, throughout the summer months.

Pemp. caliginosella, n. sp.

9¼″. ♂ ♀. Head light ochreous-brown. Labial palpi rather longer than head, obliquely ascending, light ochreous-brown, in male ochreous-whitish beneath. Antennæ greyish-ochreous, in male thickened, dentate, very finely ciliated, with a flattened tuft of black scales, whitish on sides, in sinuation; in female simple, filiform. Thorax brownish-ochreous, irregularly suffused with blackish scales. Abdomen pale ochreous, segments basally suffused with grey, in male with pale ochreous anal tuft, in female with pointed elongate-conical ovipositor. Legs pale ochreous brown, slightly irrorated with blackish. Fore-wings moderately elongate, sub-triangular, narrow at base, regularly dilated, hind-margin obliquely rounded; pale greyish-ochreous-brown, almost entirely suffused with blackish fuscous except on a narrow segmental patch on costa between two-fifths and four-fifths, and a broader area above anal angle, extending more or less along inner and hind-margins; all markings obscured, except faint traces of a dark fuscous cloudy second line; a hind-marginal row of black dots: cilia pale brownish-ochreous, with two suffused grey-fuscous parting-lines. Hind-wings pale fuscous-grey, darker posteriorly, hindmarginal line dark fuscous; cilia whitish-grey, with dark fuscous-grey parting-line.

Very closely allied to *strigiferella*, but smaller, costa somewhat straighter, and distinguished by the peculiar suffusion and pale patches of the fore-wings; the sexes are precisely similar, whilst in *strigiferella* they differ markedly.

One pair, taken early in February near Sydney.

The group of five closely allied species, to which this belongs, conspicuous only by their dull colouring, do not come very close to any European species of the genus; they are perhaps nearest to *P. fusca*, *Hw.*

Pemp. oculiferella, *n. sp.*

♂. 11″-12½″. Head, palpi, and thorax, pale dull ochreous, with a few scattered blackish scales, centre of thorax blackish; labial palpi longer than head, nearly straight, obliquely ascending;

♀. 9‴-10½‴. Smaller and darker than male; fore-wings much or almost wholly suffused with dark grey-fuscous, through which the markings are only faintly visible, excepting a distinct circular ochreous spot at ⅓ of inner margin, enclosing a white dot; sometimes the ochreous colour is extended along or near inner-margin. Hind-wings slightly darker than in male.

Allied to *strigiferella* and its associates; it is variable in intensity of colouring, but generally well characterised by the inner-marginal small ocellus, which is black-centered in male, white-centered in female; the male is also distinguished by the partial reddish-ochreous tinge of disc, and the female is the darkest in the group, and also exceptional in being smaller than male.

Not uncommon at light at Parramatta; it appears to be double-brooded, occurring from November to January, and again in March.

Pemp. digrammella, n. sp.

9‴. ♂ ♀. Head ochreous-brown. Labial palpi considerably longer than head, nearly perpendicularly erect, pale ochreous, on sides dark fuscous. Antennæ dark fuscous, in male thickened, finely ciliated, with a triangular tuft of blackish scales in sinuation, in female simple. Thorax brownish-ochreous, on back greyish. Abdomen in male ochreous, in female whitish-ochreous-grey, base of segments suffused with dark grey. Legs in male ochreous, in female ochreous-whitish, more or less densely irrorated with dark fuscous. Fore-wings elongate, rather narrow, costa gently arched, hind-margin obliquely rounded; pale whitish-ochreous, suffused (especially in male) with brighter brownish-ochreous, coarsely irrorated along costa and posteriorly on veins with blackish scales; first line whitish, oblique, slightly curved, from before ⅓ of costa to two-fifths of inner margin, internally rather broadly edged with fuscous, externally with a black marginal dot above middle and another on fold; second line whitish or ochreous-whitish, strongest on costa, proceeding from five-sixths of costa obliquely inwards, sharply angulated outwards above middle, then inwards and running straight to anal angle, obscurely edged on both margins with dark fuscous, its outer margin edged on costa with an oblique short blackish-fuscous wedge-shaped streak reaching apex; a large black dot in middle of wing before ⅔, placed in a slender longitudinal whitish line; an obsolete row of blackish hind-marginal spots: cilia pale grey, with three clear darker parting-lines. Hind-wings rather pale fuscous-grey, darker posteriorly, hind-marginal line dark fuscous; cilia whitish-grey, with darker grey parting-line.

Closely allied to *strigiferella*, *rufitinctella*, and *oculiferella*, but differing from all (except the much larger female of *strigiferella*) by its clearly expressed first and second lines, as well as by its small size, and single (not double) discal black dot. The sexes are quite similar in size and appearance.

streak from base to apex, the lower margin of which is suffused into ground-colour; cilia pale dull greyish-crimson. Hind-wings pale fuscous-grey, subhyaline towards base, darker at apex, hind-marginal line fuscous; cilia whitish-grey.

Apparently allied to the European *P. semirubella, Sc.*, but much smaller, with narrower and more pointed forewings, more suffused with dark grey, and with broader costal streak.

Three specimens (one male, two females) sent from Duaringa, Queensland, by Mr. G. Barnard.

SPERMATOPHTHORA, *Ld.*

Forehead with an obtuse cone of scales. Ocelli present. Antennæ slightly sinuate above base in both sexes. Labial palpi rather short, ascending, compressed, terminal joint horizontal. Maxillary palpi filiform, appressed, in male rather long, in female quite short. Fore-wings with 11 veins, 4 and 5 stalked. Hind-wings with 7 veins.

This genus contains only one European species; the species described below is doubtfully associated with it, though certainly akin; it has the facies and general character of a *Pempelia*, but is without the characteristic antennal tuft of male. The Australian species possesses instead three minute acute teeth on the inner side of antennæ a little above base; the basal joint is also thickened.

Sperm. mesactella, n. sp.

7½″. ♂. Head pale ochreous, frontal cone blackish. Palpi slightly longer than head, straight, obliquely ascending, second joint pale ochreous, becoming blackish at apex, terminal joint entirely black. Antennæ pale ochreous, basal joint swollen, laterally compressed, sinuate above base, fourth to sixth joints each with a small black acute slender tooth. Thorax pale ochreous-grey, anterior margin tinged with dull carmine. Abdomen pale ochreous, bases of segments irrorated with pale grey. Legs ochreous-whitish, slightly irrorated with fuscous, all tarsi and apex of posterior tibiæ entirely dark fuscous. Fore-wings moderately elongate, gradually dilated nearly to apex, hind-margin slightly oblique, rounded beneath; pale whitish-ochreous, suffused with darker ochreous, and thinly sprinkled with blackish-scales; a very broad whitish subcostal band, thinly sprinkled with black scales, from base to costa just before apex, completely covering costa except a very narrow strip from ¼ to ¾; this subcostal band is margined beneath from ¼ to apex by a rather broad cloudy fuscous-grey streak, mixed with blackish; second line barely indicated by an obsolete prolongation of this cloud towards anal angle; a row of dark fuscous scales along hind-margin: cilia fuscous-grey, paler towards tips, with indistinct rows of whitish points. Hind-wings unicolorous pale grey, hind-marginal line clear dark fuscous; cilia pale grey, towards anal angle whitish, with strong dark fuscous parting-line.

This species bears considerable superficial resemblance to the from base nearly to costa just before apex, attenuated and obsolete at extremity; cilia white, with several rows of indistinct pale grey points. Hind-wings white, very faintly tinged with fuscous towards apex, hind-marginal line fuscous-grey; cilia white, with faint grey parting-line.

Not to be confused with any other *Eucarphia;* it somewhat resembles superficially *Etiella sincerella*, but, in addition to the generic differences, may be known by its white head and subcostal (not costal) white streak.

One male at light, Parramatta, in October.

Euc. vulgatella, Vol. III., p. 207.

In addittion to the localities given, this species occurs generally in the Illawarra and Shoalhaven districts, and was taken by Mr. Raynor commonly throughout Tasmania.

Euc. cnephæella, n. sp.

12″-12½″. ♀. Head greyish-ochreous, collar irrorated with black scales. Labial palpi more than twice as long as head, porrected, slightly bent downwards, laterally compressed, greyish ochreous, on sides and apex suffused with fuscous. Antennæ fuscous-grey. Thorax greyish-ochreous, more or less densely irrorated with blackish scales. Abdomen whitish-ochreous irrorated with dark fuscous-grey. Legs pale ochreous, suffusedly irrorated with dark fuscous. Fore-wings rather short, moderately broad, posteriorly gradually dilated, hind-margin moderately oblique, slightly rounded; whitish-ochreous, discally suffused with clearer ochreous, rather closely and irregularly irrorated with blackish-grey scales, sometimes so densely as to overcloud the ground-colour; these dark scales generally disappear along the fold, leaving an obsolete paler line; an irregular strong blackish spot in middle of base; first line cloudy, blackish, rather broad, from ¼ of costa obliquely outwards to disc, there rectangularly bent in and proceeding obliquely inwards to two-fifths of inner margin; second line cloudy, blackish, indistinct, strongly waved throughout, tending to separate into elongate points, broadly sinuate inwards beneath costa; a cloudy blackish oblique apical blotch or streak, obscuring origin of second line; a single large elongate black dot on disc at $\frac{2}{3}$, midway between costa and inner margin; in suffused specimens the markings are partially obscured; a hind-marginal row of about eight small cloudy black dots: cilia fuscous-grey, with several rows of whitish points. Hind-wings pale fuscous-grey, rather darker towards apex; hind-marginal line clear, dark fuscous; cilia greyish-whitish, with strong clear dark fuscous parting-line.

Closely allied to *Euc. vulgatella*, but easily recognised by the broader fore-wings, with more arched costa, and the strongly marked transverse lines, which in *vulgatella* are hardly indicated. Also very similar to *Pemp. strigiferella* female, from which it may

Fore-wings elongate, narrow, slightly dilated, hind-margin slightly oblique, rounded beneath; brownish-ochreous, irregularly and densely mixed with blackish, and with a few whitish-ochreous or whitish scales, and suffused in irregular patches, except along costa, with ochreous-orange or dull carmine; a short black basal streak on inner-margin; first line broad, whitish, cloudy, from ⅓ of costa obliquely outwards, angulated inwards on disc, then outwards on fold, thence to inner margin at two-fifths, bordered externally throughout by a broad cloudy blackish fascia; second line narrow, whitish, waved, from five-sixths of costa to anal angle, sending a strong blunt angulation inwards below costa, and a short acute one just above anal angle, margined throughout on both sides with blackish, most strongly internally; two round black dots on disc at ⅔, above middle, the upper one nearer base; hind-marginal line black, interrupted on veins; cilia ochreous at base, becoming pale grey. Hindwings pale grey, slightly darker posteriorly; hind-marginal line clear, dark fuscous; cilia whitish-grey, tinged with ochreous, with indistinct darker grey parting-line.

This is at present the only Australian representative of the genus, the other species originally referred to *Myelois* being more correctly placed elsewhere; it is narrower-winged than the typical European forms.

One pair taken at Sydney and Parramatta in October, the male at light, the female at rest on a fence.

EUZOPHERA, *Z.*

Forehead smooth. Ocelli present. Antennæ not sinuate, simple. Labial palpi rather short, ascending filiform, terminal joint shorter than second, rather pointed. Maxillary palpi very short. Fore-wings usually narrow, posteriorly dilated, costa more or less curved. Hind-wings rather narrow, flatly rounded. Fore-wings with 11 veins; 4 and 5 stalked or rarely separate.

Hind-wings with 7 veins; 2 before (rarely from) posterior angle of cell.

This genus, which contains about a dozen European species, is nearly allied to *Myelois*, from which it is distinguished by the hind-wings having only 7 veins.

Euz. leucarma, n. sp.

7‴. ♂. Head dark grey, mixed with whitish. Palpi nearly straight, obliquely ascending, reaching a little above head, blackish mixed with purplish-white, second joint with a terminal white ring. Antennæ somewhat compressed above basal joint, thickened, finely ciliated, whitish-ochreous. Thorax dark grey. Abdomen blackish-grey, sides, apex, and apical ring of each segment pale dull ochreous. Anterior and middle legs dark purple-fuscous, tarsi with whitish-ochreous rings at apex of joints, middle tibiæ whitish on apical half except an oblique blackish band at ¾;

Eux. subarcuella, Vol. III., p. 211.

This species and the succeeding one are shown by the neuration, which I had not previously been able to examine, to differ from *Myelois* in the possession of only 7 veins in the hind-wings, and must therefore be referred to this genus.

Eux. cosmiella, Vol. III., p. 212.

One male sent from Duaringa, Queensland, by Mr. G. Barnard.

Eux. microdoxa, n. sp.

7‴-7½‴. ♂ ♀. Head, palpi, and thorax whitish-grey, mixed with darker grey-fuscous; palpi arched, ascending, shorter than head. Antennæ fuscous-grey. Abdomen ochreous-grey, anal tuft whitish-ochreous. Legs whitish, very finely and densely irrorated with blackish; anterior and middle tarsi blackish with white rings at apex of joints; posterior tibiæ and tarsi white above. Fore-wings short, moderately narrow at base, rather strongly dilated, hind-margin oblique, slightly rounded; in the the male specimen white, irregularly irrorated with close blackish scales, so as to appear dark grey, except on a round suffused spot before first line above middle, and an irregular inwardly oblique costal spot before apex; in the female specimen dull light-grey, irrorated with fuscous, with a large dark fuscous blotch resting on costa between first line and discal spots; in both the lower half of wing somewhat suffused with pale grey-brown; first line slender, clear, black, nearly straight, irregularly dentate, from two-fifths of costa to middle of inner margin, internally margined with whitish; second line slender, black, swollen towards inner margin, from four-fifths of costa to just before anal angle, faintly dentate, slightly angulated inwards just above middle, margined externally with whitish, and beyond this by a broader dark fuscous-grey shade; two strong black discal dots at ⅔, one directly above the other, almost confluent into a streak; a hind-marginal row of blackish irregular spots; cilia fuscous-grey, with rows of whitish points. Hind-wings dark ochreous-fuscous-grey; cilia grey-whitish, tinged basally with ochreous, with faint darker parting-line.

A dull-looking species, having somewhat the facies of *Ephestia*, recognisable by the distance of the first line from base of wing.

One pair, certainly belonging to the same species, though the ground-colour is differently disposed; the male taken by Mr. G. H. Raynor at Launceston, Tasmania, early in January; the female sent from Duaringa, Queensland, by Mr. G. Barnard.

EPISCHNIA, *Hb.*

Forehead with a cone of scales. Ocelli present. Antennæ in male sinuate above basal joint, finely ciliated, in female simple. Labial palpi long, somewhat ascending, compressed; maxillary palpi short. Breast in male with a long tuft of hairs. Fore-wings narrow, hardly dilated; hind-wings narrow, very flatly and before middle; a faint transverse slender fuscous cloud a little before apex; hind-marginal line dark fuscous: cilia whitish-ochreous, tips and a cloudy parting-line fuscous. Hind-wings whitish, extreme apex infuscated; cilia whitish, smoky at apex.

One female taken at Sydney on a fence in December.

ANERASTIA, *Hb.*

Aner. mirabilella, Vol. III., p. 213.

Since publishing my description, I have obtained two females at light at Parramatta in October. This sex differs from the male in having the white dorsal blotch of the fore-wings much suffused with black, and the hind-wings blackish-grey, with ochreous cilia, without any continuation of the dorsal blotch of fore-wings over their surface; in all other respects the sexes are similar in colouring.

Aner. virginella, n. sp.

8″-11½″. ♂ ♀. Head carmine-pink, thinly mixed with whitish-ochreous. Palpi more than two and a half times as long as head, horizontally porrected, carmine-pink, mixed with whitish above and internally. Antennæ ochreous-whitish, basal joint suffused with carmine anteriorly, in male rather strongly sinuate above base. Thorax carmine-pink, mixed with whitish posteriorly. Abdomen elongate, whitish-ochreous. Legs whitish-ochreous. Fore-wings elongate, moderately narrow, costa slightly arched, apex rounded, hind-margin very oblique; carmine-pink, towards costa and inner-margin tinged with ochreous; the veins more or less distinctly white, the median vein most conspicuous; cilia carmine-pink. Hind-wings whitish, hind-marginal line pale fuscous-grey; cilia whitish, with cloudy grey parting-line.

Appears to be nearly allied to the Indian *A. sceletella, Z.*, which however has subcrect palpi. Three specimens (one male, two females) sent from Duaringa, Queensland, by Mr. G. Barnard.

Aner. psamathella, *n. sp.*

9½‴. ♂. Head whitish-ochreous. Palpi thrice as long as head, roughly-scaled, horizontally porrected, whitish-ochreous, mixed on sides with dark fuscous. Antennæ whitish-ochreous, thickened, subdentate, finely ciliated, rather strongly sinuate above basal joint. Thorax whitish-ochreous, irrorated with darker. Abdomen whitish-ochreous. Legs greyish-ochreous, tarsi mixed with dark fuscous. Fore-wings elongate, moderately narrow, costa markedly arched, apex rounded, hind-margin very oblique; greyish-ochreous, becoming much paler along inner-margin; all veins broadly indicated with ochreous-whitish; a few large black scales tending to form a transverse row a little before hind-margin, and two or three other scattered black scales towards inner-margin and base; a row of nearly obsolete cloudy fuscous dots on hind-margin: cilia ochreous-whitish, tips mixed

Eph. sericaria, Scott., Proc. Zool. Soc., Lond., 1859, 207, pl. lxi., *(Hyphantidium).*

I have not seen specimens of this species, but the characters given by Mr. Scott indicate a true *Ephestia*; and the larval habit of spinning continuous silken sheets of web of great extent, although sufficient to prove that the species is distinct from those known in Europe, cannot be regarded as in itself of generic importance. The description of the imago is, unfortunately, valueless for specific distinctions, as it would apply equally well to every species of the genus; according to the figure, the insect approaches *ficulella* in shape, but differs in the somewhat angulated first line, and the presence of two other transverse dark lines between the first line and base; it would be unsafe to draw further distinctions from the figure alone.

The larvæ from which Mr. Scott's specimens were bred fed on maize, and covered the whole walls of the room with a closely-woven sheet of white web, covering in this particular instance about 250 square feet: the imagos appeared in October. The locality was in the district of Wollombi, New South Wales.

GALLERIDÆ.

APHOMIA, *Hb.*

Fore-head in male with a broad projecting cone of scales. Antennæ filiform, basal joint sometimes with a small tooth of scales. Labial palpi in male short, ascending, terminal joint pointed, excavated behind, notched; in female as long as thorax, slender, filiform, with appressed scales, porrected. Maxillary palpi very short. Fore-wings varying in breadth, sometimes very narrow, hind-margin obliquely rounded; hind-wings flatly rounded. Fore-wings with 12 veins; discoidal cell of male in some species very broad and long, in others normal, in female always moderate; 8 and 9 rising near together from 7; 4 and 5 stalked or separate. Hind-wings with 7 veins, 5 being absent.

I have followed Zeller in reuniting to *Aphomia* his genus *Melissoblaptes*, originally separated from the typical *Aphomia* by the shorter discoidal cell of male, and not toothed basal joint of antennæ. The discovery of intermediate exotic species has rendered this distinction untenable, although the extreme forms are very diverse in appearance. *A. latro, Z.*, described below, was referred by him to *Melissoblaptes;* the other species are truly *Aphomia.*

The genus contains few species, but occurs also throughout Europe, North America, and in Japan.

Aph. tripartitella, n. sp.

10½″-12½″. ♀. Head grey-whitish mixed with grey. Labial palpi twice as long as head, horizontal, grey-whitish tinged with ochreous. Antennæ grey-whitish, slenderly annulated with black. Thorax grey-whitish, more or less entirely suffused with dark wings whitish-ochreous-grey, towards apex suffused with dark fuscous; cilia grey-whitish, with a broad cloudy fuscous parting-line.

Three females taken on fences near Sydney in December and January.

Aph. pachytera, n. sp.

11‴-12‴. ♂. Head whitish-grey irrorated with blackish, with short dense overhanging frontal tuft. Labial palpi short, appressed, almost concealed in frontal scales, whitish-grey mixed with darker. Antennæ filiform, whitish-grey, slenderly annulated with black. Thorax whitish-grey, coarsely irrorated with darker, forming confused blackish spots on shoulders and posteriorly. Abdomen greyish-ochreous, segments basally suffused with darker. Legs whitish, very finely and densely irrorated with blackish, except on posterior pair above; middle and anterior tibiæ with an oblique blackish band before apex, tarsi nearly black with slender white rings at apex of joints, Fore-wings elongate, moderately broad, discoidal cell not abnormally large, costa regularly arched, apex rounded, hind-margin flatly rounded off beneath; whitish-grey, densely but irregularly irrorated with dark grey and blackish scales; first line strong, cloudy, blackish, from ⅓ of costa to two-fifths of inner-margin, uniformly convex outwardly, nearly preceded by an almost obsolete slender blackish parallel line; second line double, cloudy, blackish, enclosing a whitish central space, inner line broadest and darkest, from before four-fifths of costa to before anal angle, central half dentate and strongly bowed outwards; a cloudy dark grey costal blotch before apex; two black dots longitudinally placed on disc, one before, one beyond middle, nearer to costa than to inner-margin; hind-marginal line black, interrupted: cilia dark grey, tips and an obsolete line near base whitish. Hind-wings grey-fuscous, tinged with ochreous; hind-marginal line blackish: cilia fuscous-grey, with sharp blackish-fuscous parting-line.

Having only the male of this species, I cannot positively assert that it is not the other sex of the preceding, to which it bears considerable general resemblance. Many of the differences might be merely sexual, but the differently shaped, not angulated, first line is probably a reliable specific distinction.

Two males taken by Mr. G. H. Raynor near Hobart Town, Tasmania, in January.

Aph. latro, Z., z. b. V. 1873, 213.

16‴-16½‴. ♂ ♀. Head, palpi, and thorax pale greyish-ochreous; palpi sprinkled on sides with fuscous, in male short, almost concealed in frontal cone, in female long, attenuated, porrected. Antennæ pale greyish-ochreous, slenderly annulated with dark fuscous, basal joint in male with a very short tooth of scales. Abdomen elongate, pale greyish-ochreous, in female with long projecting

The largest species of the group, and not to be confused with any other known; the very elongate fore-wings have a peculiarly glossy appearance.

Larva sixteen-legged, very stout, tapering at both ends, head much narrower than body, whole surface with a few scattered hairs; darker or lighter dull drab-brown, spots, small, black; head and second segment black; anal segment with a small black plate. Feeds in the tall spike-like flower-heads of *Xanthorrhœa hastilis* (the so-called 'grass-tree'), burrowing amongst the seeds and forming tough galleries with silk and refuse, in October. Pupa in a firm cocoon amongst refuse. These larvæ were very restless in captivity, and could hardly be restrained; they occurred gregariously in the heads, one spike containing apparently nearly 100 larvæ of different sizes, who eventually consumed the entire head. My specimens were bred in November; I have never taken the imago at large; it is probably very retired in habit. The larval habits of this species are abnormal in the genus and family; all previously known larvæ are parasitic in habit, feeding in the nest of bees on the wax; this species is therefore of peculiar interest.

My larvæ were found near Sydney; Zeller's original specimen was from Adelaide.

The venation of this species differs from that of the others investigated in having veins 8 and 9 of fore-wing rising on a short stalk, instead of separately, from 7.

For the benefit of students, I add a classified list of all the species of *Crambites* mentioned in this and my preceding paper.

CHILONIDÆ.

SCHOENOBIUS, *Dup.*
    imparellus, n. sp.

CHILO, *Zk.*
    parramattellus, n. sp.

leptogrammellus, n. sp.
schistellus, n. sp.(? huj. gen.)

CRAMBIDÆ.

ANCYLOLOMIA, *Hb.*
Westwoodi, Z., Cr. II.
(Prionophora ruptella, Wkr. ad hanc fam. non pertinet.)

CRAMBUS, *F.*
apicistrigellus, n. sp.
concinnellus, Wkr., Cat. 165.
latívittalis, Wkr., Cat. 171; *halterellus, Z., Cr.* 33.
torrentellus, n. sp.
trivittatus, Z., Cr. 34; *bivittellus, Wkr., Cat.* 171. *(nec Don.)*
bivittellus, Don., Z., Cr. 34; *recurvellus, Wk. Cat.* 171.
aurantiacus, n. sp.
bifractellus, Wkr. Cat. 174.

PHYCIDÆ.

NEPHOPTERYX, *Z.*
- *stenopterella* *n. sp.*
- *fornacella, n. sp.*
- *euraphella, n. sp.*
- *infusella, n. sp.*
- *opimella, n. sp.*

PEMPELIA, *Hb.*
- *melanostyla, n. sp.*
- *strigiferella, n. sp.*
- *caliginosella, n. sp.*
- *oculiferella, n. sp.*
- *digrammella, n. sp.*
- *rufitinctella, n. sp.*
- *apotomella, n. sp.*

ETIELLA, *Z.*
- *sincerella, n. sp.*
- *Behrii, Z., Is.* 1848, 883.
- *chrysoporella, n. sp.*

SPERMATOPHTHORA, *Ld.*
- *mesactella, n. sp.* (? huj. gen.)

EUCARPHIA, *Hb.*
- *neotomella, n. sp.*
- *ensiferella, n. sp.*
- *vulgatella, n. sp.*
- *cnephæella, n. sp.*

LASIOCERA, *n. g.*
- *canilinea, n. sp.*

CEROPREPES, *Z.*
- *almella, n. sp.*

MYELOIS, *Z.*
- *ænobarella, n. sp.*

Euzophera, *Z.*
  leucarma, n. sp.
  subarcuella, n. sp.
  cosmiella, n. sp.
  microdoxa, n. sp.

Epischnia, *Hb.*
  neurophorella, n. sp.

Anerastia, *Hb.*
  mirabilella, n. sp.
  virginella, n. sp.
  psamathella, n. sp.

Homœosoma, *Curt.*
  vagella, Z., Is. 1848, 863.
  distichella, n. sp.

Ephestia, *Gn.*

NOTES ON CYPRÆA GUTTATA.

BY JAMES HOBSON.

I have recently become the fortunate possessor of a rare and beautiful specimen of *Cypræa guttata*, a species which I have traced to have been discovered just one hundred years ago, but up to the present time only five specimens have been made known to science. It will be interesting to know that the home of the shell is New Britain, as up to 1870, the present time, I believe the habitat was unknown. It was first brought prominently to light by Gray in Reeve, 1845, who says this very rare and remarkable shell is the largest species of that division of the genus to which the *Cypræa erosa* and *Lamarcki* belong. Its chief peculiarity consists in the teeth extending across the base in bright saffron-red ridges, each of which passes over the edge and a little way up the side, terminating in a point; they have a somewhat irregular wrinkled appearance, and are here and there forked. The white spots on the back are extremely variable in size, and as in the *Cypræa vitellus*, have the appearance of a miniature firmament of stars of different degrees of magnitude. The back of the shell is not however so highly enamelled as in that species, nor are the spots of the same round definite character.

Sowerby in his *Thesaurus Conchyliorum*, 1870, says the dorsal view of this shell bears a singular resemblance in form to *Lamarcki* or *eburna*, although it is much larger and more boldly sculptured at the sides; but on a view of the base it is at once perceived that the species is one of those that stand quite alone. The singular manner in which the chesnut-coloured teeth are continued over the base and margins, and collected into a thickened irregular sort of platform in the middle, is not even suggestively approached in any other species.

The specimen, the only one in the colonies, which I now exhibit to the meeting, I judge to be a superior and slightly differently marked specimen to that described by Gray, from the fact of it being quite as highly enamelled, and the spots fully as round and definite in character, as any specimen I have seen of the well-known *C. vitellus*.

EXHIBITS.

By the President.—A named set of Fungi of Australia, chiefly from the Collection of the Hon. W. Macleay.

By Mr. Masters.—A new species of *Serranus* and a new *Percis* from the Fiji Islands, and two heads of Malicolo Chiefs, showing the skulls lengthened out as is done during infancy. The profiles had been reproduced with prepared clay.

WEDNESDAY, APRIL 30TH, 1879.

The Vice-President, W. J. Stephens, Esq., M.A., in the Chair.

The Minutes of last meeting were confirmed.

The Chairman announced the presence of Dr. Smith as a Visitor.

Mr. William A. Haswell M.A., B.Sc., was elected a Member.

DONATIONS.

From the Medical Society of Victoria; Part IV. of the first volume of the Society's Proceedings.

Notes by T. S. Ralph Esq., "On a case of Soft Cancer with Hydatids."

PAPERS READ.

ON AUSTRALIAN AMPHIPODA.

BY WILLIAM A. HASWELL, M.A., B.Sc.

[Plates VII.—XII.].

The Edriophthalms of Australia, as of the Southern Hemisphere generally, have suffered considerable neglect at the hands of naturalists. Milne-Edwards in his "Histoire naturelle des Crustacés," (1837), describes but one species of Australian Amphipod; Prof. Dana in his great work on the Crustacea of the United States Exploring Expedition describes six species from the Australian coast; among the species described by Stimpson in papers published in the Proceedings of the Academy of Natural Sciences of Philadelphia (1855) are two from Australia; finally Mr. C. Spence Bate in his valuable "Catalogue of the Amphipoda in the Collection of the British Museum" (1862), adds four new species to the list of Australian forms.

The present paper contains descriptions of thirty-seven new species, comprising, as might be expected, several interesting new generic forms.

It would be premature until a more complete series has been obtained to offer any generalisations on the relations borne by the Australian region—as regards this group of Crustacea—to the other zoological provinces. I am confident however, from what I have already observed that the edriophthalmous fauna of Australia will prove on further investigation to be an exceptionally rich one, and will be found to possess a well-marked distinctive facies.

Of the specimens from which the descriptions and drawings were made, some, including all the Tasmanian species, are in the collection of the Hon. William Macleay, of Elizabeth Bay, Sydney, by whom they were kindly lent me for examination; others were obtained during the dredgings carried on in Port equal in length to the cephalon and pereion; peduncle with three articuli visible, the third nearly twice as long as the second; flagellum longer than peduncle, finely fringed with cilia. Mandibles powerful, very deep; furnished with a large and prominent molar eminence crossed by about a dozen dentary ridges; cutting edge armed with four teeth, that nearest the molar surface bifurcated, the next two simple, prominent, the fourth inconspicuous; between the first of these teeth and the molar eminence are several pointed curved ciliated spines. Maxillipedes resembling somewhat those of T. locusta; the plate of the first articulation armed with three short blunt teeth, that of the second articulation ending in a single tooth; carpus and propodos with one or two setæ. Anterior gnathopoda pediform, the propodos tapering distally. Posterior gnathopoda imperfectly subcheliform; the carpus and propodos long and narrow (longer in the female than in the male) the short dactylos situated at a little distance from the extremity of the propodos.* Anterior pereiopoda subequal. Pereiopoda of the third pair much shorter than the fourth and fifth; bases of fifth pair broad, finely serrated along the posterior margin. Last pair of pleopoda short. Telson consisting of a disc-like, dorsally-concave plate, bordered with hairs. and cleft in the middle line posteriorly.

Colour usually dark slate; occasionally dull yellow.

Length five and a half lines.

The habitat of this species of Talitrus is peculiar. It is abundant on moist ground in wood and scrubs of New South Wales; I have received specimens, obtained by Mr. George Masters, from Rootyhill (a point about 30 miles from the coast) where it is very common; how much further inland its range may extend I have no exact data to enable me to determine; probably it is confined to a maritine belt of moderate breadth, as I am informed that it is not met with in the far interior. I have never observed it on the sea-shore.

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*These appendages instead of being habitually folded up under the pereion, as in T. locusta and other species of the genus, are in constant and active use as organs ancillary to the process of mastication.

Genus TALORCHESTIA, Dana.

Talorchestia diemenensis, *sp. nov.* (Pl. VII., fig. 6.)

Superior antennæ equalling the cephalon in length. Inferior antennæ equal in length to the cephalon and first three segments of the pereion, the third joint short, the fifth the longest; flagellum subequal with the peduncle, fringed with short hairs. Anterior gnathopoda in the male with the carpus broad distally, the propodos quadrangular, twice as long as broad, the palmar border transverse, slightly sinuous, the dactylos short; in the female with both carpus and propodos narrower than in the male, the palmar border with a deep mesial notch, the dactylos well-developed. Posterior gnathopoda in the male large, the propodos [redacted]

Male.—Coxæ deep. Eyes large, round. Inferior antennæ exceeding in length the cephalon and two first segments of the pereion; peduncle and flagellum subequal, the fifth joint of the former longer than the fourth. Superior antennæ equalling in length the third and fourth segments of the peduncle of the inferior pair. Mandibles very powerful, resembling in general form those of *Talitrus sylvaticus*, the cutting edge with several strong curved teeth, between which and the grinding tubercle are seven slender ciliated spines; the molar tubercle broad, crossed by numerous very fine, acute transverse ridges. Maxillipedes non-unguiculate, the edges of the two terminal segments and of the lateral plates armed with numerous setæ. Anterior gnathopoda subchelate, carpus and propodos subequal, armed with setæ; propodos subtriangular, palm transverse, hairy, defined by a rounded elevation, superior border with five setiferous serrations. Posterior gnathopoda with the propodos large, varying in size; usually about four times as long as that of the anterior pair, sub-quadrate, the palm transverse, excavated, armed with a few minute teeth. First pair of pereiopoda rather longer than the second; third pair much shorter than fourth and fifth; fifth the longest, its basos much broader than that of the others; three posterior pairs armed with setæ, set on lateral serrations. Posterior pleopoda with the ramus slender. Telson triangular, blunt, cleft.

Female.—Anterior gnathopoda subpediform, the propodos narrowing distally, its superior border serrated, setiferous, its lower border setiferous, entire. Posterior gnathopoda with the carpus and propodos narrow, the dactylos rudimentary, not reaching to the extremity of the propodos. Colour white, with irregular light-red spots.

Length six lines.

Hab. Sandy beaches, coast of New South Wales (Manly, Bondi, Kiama); found under masses of decaying sea-weed above the reach of ordinary tides.

Genus ORCHESTIA, Leach.

Orchestia Macleayana, *sp. nov.* (Pl. VII., fig. 2.)

Male.—Inferior antennæ as long as the cephalon and first four segments of the pereion; the peduncle stout and longer than the flagellum. Superior antennæ about one-third of the length of the inferior pair, slightly exceeding the cephalon in length; flagellum and peduncle subequal. Anterior gnathopoda with the carpus triangular, longer than the propodos; the propodos broader at its distal than at its proximal end, the palm transverse. Posterior gnathopoda with the propodos membranous, large, cordiform, thrice as long as that of anterior pair; palm oblique, undefined, waved. First pair of pereiopoda longer than second. Second pair with the meros broader than that of first pair. Three posterior pairs increasing progressively in length, the fourth pair much longer than the third and the fifth slightly longer than the fourth; basos of the fifth with a tooth on its posterior margin.

pereion; flagellum and peduncle subequal. Anterior gnathopoda of moderate size, the carpus with a projecting ciliated process on its inferior border; the propodos ovoid; palm oblique, convex, defined by a blunt tooth. Posterior gnathopoda large; the propodos more than twice as long as that of the anterior pair, ovoid, its proximal border with a deep notch, its superior border strongly convex, palm scarcely oblique, convex, armed with an obscure tooth. Pereiopoda of the two anterior pairs subequal. Three posterior pairs of pereiopoda increasing progressively in length from before backwards. Posterior pleopoda short. Telson nearly semicircular, divided.

Length four-and-a-half lines.

Hab. Shallow rock-pools a little above high-water mark, Clark Island, Port Jackson; Botany Bay.

This species is distinguished from *A. Gaimardii (Amphithöe Gaimardii, Edwards, Hist. des Crust.* iii. 37; *Allorchestes compressa, Dana, Proc. Amer. Acad. Sci. Bost.* ii. 205; *Allorchestes Gaimardii, U. S. Explor. Exped. p.* 184, *pl.* 60, *fig.* 1; *Spence Bate, Cat. Amph. p.* 41, *pl.* 6, *fig.* 9.*)* which seems to be its nearest ally, chiefly by the form of the anterior gnathopoda.

Allorchestes longicornis, *sp. nov.* (Pl. VII., fig. 4.)

Inferior antennæ as long as the cephalon and the whole of the pereion; third segment of peduncle short; fifth the longest; flagellum more than twice as long as the peduncle. Superior antennæ with the peduncle as long as the third and fourth segments of the peduncle of the inferior pair; first and second joints subequal; third smaller; flagellum twice as long as the peduncle. Anterior gnathopoda with the carpus sub-triangular, having a small hairy process on its ventral aspect; the propodos equal in length to the carpus, rather longer than broad, its dorsal border nearly straight, its palmar border strongly convex; palm oblique, defined by a small tooth. Posterior gnathopoda with the propodos twice as long as that of the anterior pair, heart-shaped, nearly twice as long as broad; palm nearly longitudinal, defined by a sharp tooth. Third pair of pereiopoda much shorter than the fourth and fifth.

Length about five lines.

Hab. Kiama, New South Wales, under large stones between tide marks.

Allorchestes crassicornis, *sp. nov.* (Pl. VII., fig. 5.)

Inferior antennæ as long as the cephalon and first three segments of the pereion; peduncle stout; third segment much longer than the others; flagellum very stout, rather longer than the peduncle. Superior antennæ exceeding in length the first and second segments of the peduncle of the inferior pair; the segments of the peduncle all of nearly equal length, the third slightly shorter than the other two; flagellum half as long again as the peduncle. Anterior gnathopoda with the carpus sub-triangular, having a as long as the cephalon and first segment of the pereion; first joint of peduncle compressed; third joint longer than second; flagellum as long as third joint of peduncle, composed of few (seven or eight) articuli; appendage very short. Inferior antennæ nearly as long as the superior; flagellum very short, of six articuli. Gnathopoda sub-pediform, similar; anterior pair with the basos much shorter than that of the posterior pair; both hairy, with the carpus and propodos of equal length, the former sub-triangular, the latter narrow. Posterior pereiopoda with the meros produced and pointed at its postero-distal angle, and the carpus rather short, with two teeth at its distal extremity. Three posterior pairs of pleopoda stout; the rami of all three equal, short. Telson small, squamiform, slightly cleft.

Length about five lines.

Hab. Tasmania (M.-M.)

This species—of which the Hon. William Macleay has two specimens in his collection (obtained, I believe, by Mr. W. F. Petterd in Tasmania, probably in shallow water) belongs without doubt to the same genus as the rare Arctic form *Stegocephalus ampulla*. It seems to differ from it mainly (1) in the greater relative length of the peduncle in both the superior and inferior antennæ, (2) in the subchelate form of the anterior gnathopoda, (3) in the shortness of the rami of the three posterior pairs of pleopoda.

Genus AMARYLLIS, *(novum)*.

Superior antennæ with a well-developed appendage. Mandibles with a palp. Maxillipedes with well-developed squamiform plates. Anterior gnathopoda sub-pediform. Posterior gnathopoda imperfectly subchelate. Rami of the fourth and fifth pleopoda styliform; those of sixth pair broad-lanceolate. Telson squamiform, cleft.

Amaryllis macrophthalmus, *sp. nov.* (Pl. VIII., fig. 3.)

Eyes vertically elongated, sub-crescentic. Superior antennæ equal in length to the cephalon and first five segments of the pereion; first joint of the peduncle as long as the cephalon; second and third joints short; flagellum longer than peduncle, of about thirty segments; appendage of seven segments. Inferior antennæ with the peduncle nearly equal in length to that of superior pair; flagellum longer than peduncle. Mandibles with a three-jointed palp; cutting edge produced at each end; a pointed tubercle on the outer border in front of the insertion of the palp; squamiform plate bordered with short spines. First pair of maxillæ having the two internal plates armed with a number of compressed chitinous teeth, each furnished at its extremity with a series of denticulations. Palp of maxillipedes non-unguiculate. First pair of gnathopoda slender; the carpus and propodos narrow, the latter tapering towards its distal end. Second pair rather stouter; carpus cylindrical; propodos long, narrow, its lower border convex its upper straight; palm transverse, dactylos short. Anterior pereiopoda subequal. Meros,

Genus Neobule, *(novum).*

Superior antennæ simple. Mandibles without an appendage. Maxillipedes with a squamiform process on the basos only. Gnathopoda subchelate; second pair the larger; coxæ of anterior pair well-developed. Fourth pair of coxæ wide, excavated behind to receive the anterior part of the fifth pair. Posterior pleopoda biramous. Telson squamiform.

Neobule algicola, *sp. unic.* (Pl. VIII., fig. 4.)

Eyes round. Superior antennæ as long as the cephalon and first two segments of the pereion; first segment of the peduncle longer and stouter than the others; third scarcely distinguishable from the articuli of the flagellum; flagellum rather longer than peduncle. Inferior antennæ equal in length to the superior pair; peduncle and flagellum subequal. Anterior gnathopoda with the carpus sub-triangular; the propodos longer than the carpus, oblong; the palm transverse, concave. Posterior gnathopoda with the propodos similar in shape to that of the anterior pair, but larger. Third pair of pereiopoda shorter than the fourth and fifth; fifth pair longer than the fourth, its basos broader than that of the preceding pairs. Rami of posterior pleopoda extremely short. Telson small, entire.

Length about three lines.

Hab. Kiama, New South Wales; among sea-weed between tide-marks.

Sub-fam. LYSIANASSIDES.

Genus Lysianassa, Edwards.

Lysianassa nitens, *sp. nov.* (Pl. VIII., fig. 5.)

Superior antennæ short, equalling in length the cephalon and the first segment of the pereion; flagellum about half as long as the peduncle, of ten articuli; appendage of six articuli. Inferior antennæ subequal with superior pair; peduncle stout; flagellum rather longer than the peduncle. Anterior gnathopoda stout, pediform. Posterior gnathopoda much more slender than the anterior pair; propodos nearly twice as long as broad; palm transverse, excavated; dactylos short. Pereiopoda subequal, short and rather stout. Rami of posterior pleopoda lanceolate, both bordered with hairs on one margin. Telson simple. Colour pearly white.

Length three lines.

Hab. Port Jackson. Common among sea-weed, etc., in the sub-littoral zone.

Lysianassa affinis, *sp. nov.*

Nearly allied to the preceding; distinguished from it by the length of the inferior antennæ which are longer than the body.

Hab. Port Jackson.

Genus GLYCERA, *(novum)*.

joint of peduncle very stout, longer than the others, second and third joints very short; flagellum longer than peduncle, slender; appendage nine-jointed. Inferior antennæ longer than the superior pair; peduncle subequal with that of the latter; flagellum thrice as long as the peduncle. Anterior gnathopoda long, filiform; basos narrow, compressed; ischium meros and carpus all sub-cylindrical and slender; propodos about one third of the length of the carpus, irregularly ovoid, narrowed distally, its ventral border armed with curved setæ. Posterior gnathopoda elongated, slender, but stouter than the anterior pair; propodos nearly twice as long as carpus, sub-quadrate, nearly as broad as long, the palm concave, the ventral and distal angle prominent, acute. Third pair of pereiopoda much shorter than the rest; the basos circular, serrated posteriorly. Basos of following pairs oval, non-serrated; meros, carpus and propodos hairy. Fourth and fifth pairs of pleopods with the rami slender, styliform; rami of the last pair broad-lanceolate, acute. Lateral halves of the telson broad-lanceolate, pointed.

Length four lines.

Hab. Howick Group, N.-E. Australia (M.-M.)

SUB-FAM. AMPELISCADES.

Genus AMPELISCA, Kröyer.

Ampelisca australis, *sp. nov.* (Pl. VIII., fig. 6.)

Superior antennæ as long as the cephalon and the first segment of the pereion; first joint of peduncle short, stout; second longer and narrower; third not distinguishable from the articuli of the flagellum; flagellum slender, composed of elongated articuli. Inferior antennæ about twice as long as the superior; third segment of the peduncle short, stout; fourth narrow and elongated (as long as the cephalon); fifth rather shorter than fourth; flagellum equal in length to the first two segments of the peduncle, of about ten slender articuli. Maxillipedes with the dactylos stout, as long as the propodos; the plate of the ischium furnished along its inner margin with a series of eight short, broad, compressed spines, succeeded towards the apex by long and slender spines. Gnathopoda non-subchelate; the anterior pair with the meros, carpus and propodos of nearly equal length, narrow, furnished with long simple hairs; posterior pair similar, but shorter and slightly stouter; dactylos two-thirds of the length of the propodos. Two anterior pairs of pereiopoda with the carpus very short, about one-fifth of the length of the meros; the propodos nearly twice as long as the carpus, narrower; the dactylos as long as the carpus and propodos, nearly straight. Posterior pereiopoda with the dactylos very small, directed backwards; meros of the third and fourth pairs shorter than the carpus; carpus and propodos subequal, fringed with long hairs; basos of last pair narrower than that of third and fourth, its posterior edge with a blunt projection, armed with long bristles; the meros very short much narrower, provided below with a fasciculus of short hairs; third joint half the length of the second, scarcely distinguished from the articuli of the flagellum; flagellum nearly as long as the peduncle; appendage nearly as long as the flagellum, of about fifteen articuli. Inferior antennæ rather longer than the superior pair; fourth joint of peduncle broad, its upper surface straight, its lower convex and provided with two ridges armed with longish hairs; fifth joint as long as the fourth and of similar shape, but narrower, armed with hair below; flagellum as long as the last two segments of peduncle. Coxæ fringed with slender hairs. Gnathopoda hairy. Anterior pair with the propodos ovoid, twice as long as broad; the palm oblique, defined by a strong tooth. Posterior pair with the propodos similar to that of the anterior, but rather broader, with the palm slightly less inclined to the long axis of the propodos, and the defining tooth larger. Two anterior pairs of pereiopoda sub-equal, hairy, their meros and carpus broad. Three posterior pairs serrated and hairy; fourth pair much longer than the others, longer than the pereion; basa of the third and fourth pairs much longer than broad; fifth pair very small, the basos dilated posteriorly, broader than long, its posterior margin armed with fine serrations. Rami of sixth pleopoda broad-lanceolate; outer longer and broader than inner, serrated; inner smooth; both armed with setæ. Telson with the halves broad, compressed, truncate, bordered with a few hairs.

Length seven lines.

Dredged in Port Jackson.

Phoxus Batei, *sp. nov.* (Pl. IX. fig. 3.)

Rostrum as long as the rest of the cephalon, straight, obtuse. Eyes distinct, long-oval. Superior antennæ with the peduncle extending beyond the extremity of the rostrum; first joint of the peduncle nearly as broad as long; second as long as the first, but of only about half the breadth; third joint about one-fourth of the length of the first; flagellum longer than the last two segments of the peduncle; appendage two-thirds of the length of the flagellum, consisting of about six articuli. Inferior antennæ rather longer than the superior; the penultimate joint of the peduncle broad, its superior border straight and smooth, its inferior border convex, serrate and hairy; last joint shorter and narrower than the penultimate, serrate, armed with hairs and with two slender spines; flagellum as long as the two last segments of the peduncle. Coxæ bordered with a few hairs. Gnathopoda similar, subequal: propodos twice as long as broad; palm very oblique, defined by an acute tooth. Two anterior pairs of pereiopoda subequal, stout. Fourth pair of pereiopoda longer than the third; fifth pair shorter, with the bason very broad, but scarcely so broad as long, serrate on its posterior border. Fourth and fifth pairs of pleopoda armed with short acute spines. Sixth pair with the rami unequal; the outer broad-lanceolate truncate, than the superior pair; fourth segment of the peduncle the longest; flagellum nearly twice as long as the peduncle. Anterior gnathopoda with the carpus and propodos subequal, their ventral border armed with serrations beset with fasciculi of fine hairs; propodos rather longer than broad, palm transverse, not defined. Posterior gnathopoda with the carpus triangular, as long as the propodos, which is oblong, more than twice as long as broad, twice as long as the propodos of the anterior pair, with the palm oblique, undefined; both carpus and propodos bordered ventrally with a row of hair-bearing serrations. Third pair of pereiopoda rather shorter than the fourth and fifth, all three bordered with setæ. Rami of posterior pleopoda styliform. Telson triangular, pointed.

Length four and a half lines.

Hab. Kiama, New South Wales.

Genus Leucothoë, Leach.

Leucothoë commensalis, *sp. nov.* (Pl. X., fig. 3.)

Body large and thick. Coxæ of the second pereiopoda deeper than the rest. Eyes ovoid, black. Superior antennæ nearly as long as the cephalon and first three segments of the pereion, one-fourth longer than the inferior pair; first segment of the peduncle very stout, occupying about one-third of the total length; second rather narrower and slightly longer than the first; third short; flagellum as long as the second segment of the peduncle. Peduncle of inferior antennæ equal in length to the two first segments of the peduncle of the superior pair; flagellum very short. Maxillipedes stout, pediform. Anterior gnathopoda rather shorter than the posterior; proximal part of carpus dilated, irregularly heart-shaped; distal prolongation slender, uniform in thickness to near the end, where it tapers to a fine incurved point; propodos about three times as broad as the distal process of the carpus, which it equals in length, slightly narrowed distally, armed internally with a row of about fifteen short hairs; dactylos fully one-third of the length of the propodos. Posterior gnathopoda having the distal process of the carpus nearly half as long as the propodos, parallel-sided, incurved; propodos equalling in length the cephalon and the first three segments of the pereion, rather more than twice as long as broad, with three small teeth and a row of fine serrations on its palmar border, and aconical tooth on the opposite border at the base of the dactylos; dactylos not quite half as long as the propodos, uniformly curved. Pereiopoda subequal. Three posterior pairs of pleopoda slender, nearly smooth, the protopodite of the fourth pair longer than that of the fifth and sixth, that of the fifth the shortest. Telson elongated; the apex moderately acute.

Colour of larger variety brick-red, or greenish, sometimes light pink with innumerable minute crimson dots.

pair; the flagellum about half the length of the last segment of the peduncle. Anterior gnathopoda large, in form nearly resembling those of *L. commensalis*. Posterior gnathopoda very large; carpus closely applied to the propodos, its palmar process nearly half as long as the latter, bifurcate at the extremity; propodos exceeding in length the cephalon and first three segments of the pereion, long-oval, with two or three denticles towards the proximal end of the palmar border; dactylos more than half as long as the propodos. Pereiopoda subequal. Sixth pair of pleopoda the longest. Telson lanceolate, acute.

Length six and a half lines.

Hab. Tasmania, *(M.-M.)*

Leucothoë gracilis, *sp. nov.* (Pl. X., fig. 2.)

Coxæ of the second pereiopoda not deeper than the others. Superior antennæ equal in length to the cephalon and the two first segments of the pereion; first joint of the peduncle stout; second equal to the first in length, but narrow; third about half the length of the second; flagellum scarcely so long as the second segment of the peduncle. Peduncle of the inferior antennæ equal in length to that of the superior pair; flagellum shorter than the last segment of the peduncle. Anterior gnathopoda large, hardly distinguishable in form from those of *L. commensalis;* carpus equal in length to the cephalon and first two segments of the pereion. Posterior gnathopoda very large, as long as the cephalon and pereion, similar in shape to those of *L. commensalis;* propodos equalling in length the cephalon and two first segments of the pereion. Two anterior pairs of pereiopoda (wanting). Three posterior pairs subequal, very small and weak. Three posterior pairs of pleopoda long; the fourth and sixth subequal; the fifth shorter. Telson triangular, pointed.

Length five lines.

Hab. Tasmania, (M.-M.)

This species is mainly characterised by the uniformity of the anterior coxæ and the feebleness of the pereiopoda.

Genus Melita, Leach.

Melita australis, *sp. nov.* (Pl. IX., figs. 6 and 7.)

Four anterior segments of the pleon with their posterior dorsal border concave, and armed with two to six acute teeth. Eyes small round. Superior antennæ three-fourths of the length of the body; first joint of the peduncle stout, shorter than the second, flagellum longer than the peduncle. Inferior antennæ two-thirds of the length of the superior pair; flagellum shorter than peduncle. Anterior gnathopoda with the carpus and propodos of equal length; the former sub-triangular; the latter quadrate, the palm defined by a small spine; the dactylos curved. Posterior gnathopoda unequal in the male; the right resembling the anterior pair in form, but longer, the palm not defined, the left with the tooth and a few hairs. Superior antennæ as long as the cephalon and pereion; first two segments of the peduncle elongate, second longer than the first; third segment very short; flagellum rather shorter than the peduncle; appendage seven-jointed. Inferior antennæ with the peduncle equal in length to that of the superior pair; first segment the shorter, second the longest; flagellum about equal in length to the last segment of the peduncle. Anterior gnathopoda with the carpus and propodos subequal, hairy; the latter broad; palm oblique, armed with a few short denticles. Posterior gnathopoda unequal: right the largest, its carpus closely applied to the propodos; propodos more than thrice as long as that of the anterior pair, oblong, slightly longer distally than proximally, its length equal to nearly twice its least breadth; palm nearly transverse, defined by a strong, pointed, slightly curved tooth, and armed with three other large compressed teeth: left with the propodos about two-thirds of the length of that of the right, of similar shape, but having the palm rather more oblique, slightly convex, minutely crenulated, armed with a single small defining tooth. Three posterior pairs of pereiopoda serrated and hairy, rather shorter than the fourth and fifth. Posterior pleopoda (wanting). Telson with each division armed terminally with a sharp tooth and a few long hairs.

Length five lines.

Hab. Port Jackson (dredged).

I have named this species after Mr. E. P. Ramsay, Curator of the Australian Museum, Sydney, to whom I am indebted for the loan of specimens of this and of several other species herein described.

Genus MEGAMŒRA, Spence Bate.

Megamœra Mastersii, *sp. nov.* (Pl. XI., fig. 1.)

Eyes rather small, oval. Superior antennæ more than half the length of the body; first two articulations of the peduncle subequal; third small; flagellum as long as the peduncle; appendage short, of four segments. Inferior antennæ with the peduncle rather longer than that of the superior pair; flagellum as long as the last segment of the peduncle. Anterior gnathopoda with the carpus and propodos sub-equal, both armed with hairs below; the latter having the dorsal border nearly straight, the palmar border strongly convex and armed with four small teeth. Posterior gnathopoda having the meros, carpus and propodos hairy behind, the meros armed behind with a sharp tooth, the carpus slightly produced at its postero-distal angle, closely applied to the propodos; propodos nearly twice as large as that of the anterior pair; its dorsal border gently convex; palm well-defined, toothed. Coxæ of the two anterior pairs of pereiopoda much deeper than those of the three posterior pairs. Basos of posterior pereiopoda long-ovate, serrated on the borders; meros broad, strongly convex, produced to an acute point at its distal and posterior angle; meros and carpus armed at their distal ends with a few bristles. Fourth of the peduncle of the superior pair; flagellum shorter than the peduncle. Anterior gnathopoda small; carpus and propodos sub-equal, hairy; propodos irregularly ovate; palm straight, oblique, undefined. Posterior gnathopoda large; meros armed behind with a short spine; carpus short, closely applied to the propodos; propodos four times as long as that of the anterior pair; broad proximally, becoming narrower towards the distal end; dactylos curved, bent on the inner side of the propodos when closed. First and second pereiopoda sub-equal. Three posterior pairs very broad; meros expanded posteriorly, and, together with the carpus and propodos, serrated and armed with setæ; third pair shorter than the fourth and fifth; basos of fifth pair much broader than that of the others. Rami of the posterior pleopoda sub-equal, twice as long as the protopodite, foliaceous, armed with setæ along the margins. Telson with the halves laterally compressed, each terminating in two acute spines, and armed with a few short setæ.

Length nine lines.

Hab. Tasmania *(M.-M.)*

Genus MŒRA, Leach.

Mœra rubro-maculata, (Pl. X., fig. 4.)

Gammarus rubro-maculatus, *Stimpson, Proc. Acad. Nat. Sci., Philad.*, July 1855.

Coxæ shallower than their respective segments, fifth pair deeper than fourth. Superior antennæ half as long as the body, the peduncle rather shorter than the flagellum; first two segments rather long, third short; appendage of seven segments. Inferior antennæ a little more than half the length of the superior pair; flagellum less than half the length of the peduncle. Anterior gnathopoda rather large, hirsute below; carpus broad, triangular; propodos irregularly ovate, as long as the cephalon. Posterior gnathopoda much larger than the anterior pair; meros with a sharp spine behind; carpus hairy; propodos as long as the cephalon and two first segments of the pereion, ovate, its palm strongly convex, defined by a small tooth, its dorsal border nearly straight. Two anterior pairs of pereiopoda sub-equal, their coxæ little more than half the depth of their respective segments; meros produced anteriorly at its distal end. Three posterior pairs of pereiopoda hairy, the third pair the shortest, the fourth the longest; basos narrow, its posterior border serrated and armed with a sharp tooth at the distal end. Lateral plates (epimera) of the three anterior segments of the pleon serrated posteriorly. Fourth pair of pleopoda longer than fifth, both provided with setæ on the protopodite and rami. Last pair of pleopoda very large, biramous, the rami foliaceous, long-ovate, emarginate; their margins serrate, the serrations and the extremity armed with setæ. Telson of two short, cylindrical rami, each with one or two setæ. Colour light pink, striped and spotted with crimson.

rather longer than the propodos; the latter ovate; palm oblique, notched. Posterior gnathopoda with the propodos large, ovate, more dilated in the male than in the female, palm defined by a strong, acute tooth, and armed in the male with two other prominent teeth. Two anterior pairs of pereiopoda sub-equal. Third pair rather shorter than the fourth and fifth; basos of the three posterior pairs produced at its postero-distal angle; meros carpus and propodos serrated and hairy. Fifth pair of pleopoda much shorter than the fourth. Sixth pair large, with a stout protopodite and two broad-lanceolate rami; the latter serrated and armed with setæ. Telson double, each half ending in a sharp spine, and armed with a bundle of stiff setæ.

Length eight lines.

Hab. Tasmania *(M.-M.)*

FAM. COROPHIIDÆ.

SUB-FAM. PODOCERIDES.

Genus AMPHITHOË, Leach.

Amphithoë cinerea, *sp. nov.* (Pl. XI., fig. 4.)

Eyes round, projecting, almost colourless. Superior antennæ more than half of the length of the body; first segment of the peduncle shorter than the second; third joint very short; flagellum much longer than the peduncle. Inferior antennæ shorter than the superior pair; flagellum shorter than the last two segments of the peduncle. Anterior gnathopoda with the propodos long-ovate, armed with hairs, the palm oblique, undefined. Posterior gnathopoda with the propodos broader, but rather shorter than that of the anterior pair, hairy; palm oblique, convex, devoid of teeth, but with a tubercle near its distal end. Two anterior pairs of pereiopoda sub-equal, stoutish. Third pair with the basos sub-circular; basa of fourth and fifth pairs oval. Posterior pleopoda rather short, the rami not extending so far as those of the fifth pair; the outer ramus short, armed with two hooks; the inner slightly longer, broader, compressed, armed with a few short setæ. Telson sub-triangular, blunt.

Colour ashy-grey.

Length eight lines.

Hab. Port Jackson.

Amphithoë grandimanus, *sp. nov.*

Nearly allied to the preceding; distinguished by the size and form of the posterior gnathopoda, which are very much larger than the anterior pair, with the propodos broad, irregularly ovoid; the palm oblique, deeply excavated, its border waved, defined posteriorly by a strong tooth.

Length eight lines.

Hab. Port Jackson.

This species differs from *A. cinerea*, in the greater length of the superior antennæ, the presence of long hairs on the lower antennæ, and the greater size of the posterior gnathopoda.

Genus MICRODEUTEROPUS, Costa.

Microdeuteropus australis, *sp. nov.* (Pl. XI., fig. 5.)

Superior antennæ longer than the cephalon and pereion; peduncle armed with a few hairs; first segment nearly as long as the cephalon, stout; second twice as long as the first, slender; third very short; flagellum longer than peduncle, a few short hairs on each articulus. Inferior antennæ nearly two-thirds of the length of the superior pair; peduncle armed with a few hairs, the second joint the longest; flagellum shorter than the last segment of the peduncle, armed with hooked setæ. Anterior gnathopoda large, sub-chelate; meros small, narrow; carpus large, armed with a few scattered hairs; propodos smaller than the carpus, irregularly quadrate, rather longer than broad, armed with a few hairs; palm short, scarcely oblique, deeply excavate, minutely denticulated, bounded by a triangular tooth; dactylos stout, a row of acute denticles on its inner border. Posterior gnathopoda smaller than the anterior pair; carpus and propodos sub-equal, serrated on their ventral border, armed with fasciculi of hairs; propodos ovate, half as broad as long, palm not defined, nearly transverse; dactylos stout, about one-third of the length of the propodos, armed on its inner border with a series of acute denticles. Second pair of pereiopoda longer than the first; dactylos in both long, slender. Posterior pereiopoda (wanting). Posterior pleopoda biramous, the rami shorter than those of the preceding pairs, lanceolate, with a few short, nearly straight setæ along the borders and at the extremity. Telson large, armed with a few short hairs.

Length three and a half lines.

Hab. Port Jackson.

Genus XENOCHEIRA, (*novum*).

Char. gen. Body slender Coxæ small. Superior antennæ very long, longer than the inferior pair, with a secondary appendage. Mandibles with an appendage. Both pairs of gnathopoda non-subchelate, armed with very long hairs; carpus of posterior pair broad, plate-like, applied to the anterior (dorsal) border of the meros. Posterior pleopoda biramous. Telson simple.

Xenocheira fasciata, *sp. unic.* (Pl. XI., fig. 6.)

Eyes round. Superior antennæ as long as the cephalon and pereion; first joint of the peduncle stout, rather longer than the cephalon; second rather longer and narrower than the first; third not one-half of the length of the second; flagellum longer than the peduncle, slender; appendage short, of five segments. Inferior antennæ with the peduncle longer than that of the superior pair; fourth segment the longest; flagellum shorter

Genus HAPLOCHEIRA, *(novum)*.

Body not much compressed laterally. Upper and lower antennæ subequal; superior pair without an appendage; inferior subpediform. Both pairs of gnathopoda simple, fringed with long hair. Posterior pleopoda biramous, with unequal rami. Telson single ?

Haplocheira typica, *sp. nov.* (Pl. XI., fig. 2.)

Superior antennæ as long as the cephalon and first three segments of the pereion; first and second segments of the peduncle of nearly equal length, first stouter than second; third half as long as the latter; flagellum as long as the last two segments of the peduncle, hairy. Inferior antennæ subequal with the superior pair; peduncle armed with a few hairs, longer than that of the superior pair, fourth and fifth joints subequal; flagellum shorter than the last segment of the peduncle, composed of four articuli, each armed with pointed, slightly hooked spines and a few short hairs. Anterior gnathopoda with the propodos long and narrow; the meros, carpus and propodos fringed with long slender hairs. Posterior gnathopoda longer and more slender than the anterior pair, bordered like the latter with numerous long delicate hairs; ischium and meros small; carpus and propodos of nearly equal length—the latter tapering distally; dactylos small. Pereiopoda short, stout; three anterior pairs subequal, fourth and fifth longer. Fourth pair of pleopoda armed on the protopodite and each ramus with a row of spines which are acute and slightly curved at the tip; fifth pair shorter than the fourth, armed with similar but shorter spines; sixth pair with the rami short conical unequal, the outer armed with a few short stout spines, the inner terminated by a few hairs. Telson cleft, armed with short blunt spines. Colour dark grey.

Length three and a half lines.

Hab. Port Jackson; under stones at low-water mark.

SUB-FAM. COROPHIIDES.

Genus CYRTOPHIUM, Dana.

Cyrtophium parasiticum, *sp. nov.* (Pl. XII., fig. 1.)

Superior antennæ exceeding the body in length, hairy; the flagellum shorter than the last segment of the peduncle. Inferior antennæ nearly once and a half the length of the body, armed with long hairs; third and fourth segments of the peduncle subequal; fifth shorter. Anterior gnathopoda hairy; propodos shorter than the carpus, ovate. Posterior gnathopoda very large; propodos as long as the cephalon and the three first segments of the pereion; palmar border with a shallow excavation near the middle of its length, armed distally with fine denticles. Pereiopoda subequal. Protopodite of the fourth pleopoda stout; inner ramus longer and stouter than the outer, both armed with a few setæ. Fifth pleopoda (wanting). Sixth pleopoda short, foliaceous, ovate.

the others. Fifth pleopoda with the inner ramus larger than the outer. Inner ramus of sixth pleopoda foliaceous, outer small, long-ovate.

Length about three lines.

Hab. Port Jackson. (Dredged.)

The nearest ally of the present species appears to be *Icilius ellipticus*, (Dana, U. S. Explor. Exped., p. 844., pl. 56., fig. 4. Spence Cate, Cat. Amph., p. 285., pl. 47., fig. 10.) obtained in the north of Borneo, with which it is sufficiently closely connected to be placed in the same genus. The geographical distribution of this genus will be a matter of great interest.

GROUP ABERRANTIA.

FAM. CAPRELLIDÆ.

Genus PROTO, Leach.

Proto Novæ-Hollandiæ, *sp. nov.* (Pl. XII., fig. 3.)

Animal smooth, constricted at the joints. Superior antennæ about one-third of the length of the body; basal joint of peduncle thick, shorter than the others; second joint the longest; flagellum shorter than the second and third segments of the peduncle. Inferior antennæ more than half the length of the superior; peduncle more than twice as long as the flagellum. First pair of gnathopoda with the propodos broad, the palm oblique, slightly convex, armed with a series of short spines, and defined by a strong tooth surmounted by a spine. Posterior pair with the propodos ovate, swollen, three times as long as that of the first pair. First pair of pereiopoda slender, as long as the second and third segments of the pereion, with a slight tooth on the posterior margin of the propodos. Second pair much larger than the first or third, rather longer than the cephalon and the first two segments of the pereion, the carpus, propodos and dactylos short, the propodos armed with four spines and a row of serrations on its anterior border. Third pair very slender, equal to the first in length. Fourth and fifth pairs sub-equal, of the same length as the second, but stouter; a few spines on the carpus and propodos.

Length about seven lines.

Hab. Port Jackson.

Genus Protella, Dana.

Protella australis, *sp. nov.* (Pl. XII., fig. 4.)

Cephalon armed above with a single short, anteriorly-directed spine. Superior antennæ nearly as long as the body; peduncle stout; the second joint the longest; flagellum as long as the last segment of the peduncle. Inferior antennæ as long as the first two segments of the peduncle of the superior pair; flagellum very short. First pair of gnathopoda with the propodos sub-triangular, broad at the base, which is nearly straight, with straight, gradually converging lateral borders; dactylos more than two-thirds of the rest shorter. Superior antennæ as long as the cephalon and the first two segments of the pereion; flagellum as long as the last two segments of the peduncle. Inferior antennæ longer than the peduncle of the upper pair, ornamented below with a fringe of long hairs. Propodos of anterior gnathopoda ovate, swollen. Propodos of posterior gnathopoda two and a half times the length of that of the anterior pair, narrow; the palm defined by an obscure tooth. Branchiæ longish-ovoid. Pereiopoda stout, short, increasing in length from before backwards; the third pair as long as the fourth and fifth segments of the pereion.

Length six lines.

Hab. Port Jackson.

EXPLANATION OF THE PLATES.

Plate VII.

Fig. 1.—*Talitrus sylvaticus;* a.—*anterior gnathopod;* b.—*posterior gnathopod of* ♂; b'.—*posterior gnathopod of* ♀; c.—*maxillipedes;* d.—*mandibles.*

Fig. 2.—*Orchestia Macleayana;* a.—*anterior gnathopod;* b.—*posterior gnathopod of* ♂; d.—*posterior gnathopod of* ♀.

Fig. 3.—*Talorchestia quadrimana;* a.—*anterior gnathopod of* ♂; b.—*posterior gnathopod of* ♀; c.—*anterior gnathopod of* ♀ (connected wrongly with b. of fig. 2.); d.—*maxillipedes;* e.—*mandible.*

Fig. 4.—*Allorchestes longicornis;* a.—*anterior gnathopod;* b.—*posterior gnathopod.*

Fig. 5.—*Allorchestes crassicornis;* a.—*anterior gnathopod;* b.—*posterior gnathopod.*

Fig. 6.—*Talorchestia diemenensis;* a.—*anterior gnathopod of* ♂; b.—*anterior gnathopod of* ♀; c.—*posterior gnathopod of* ♂; d.—*posterior gnathopod of* ♀.

Plate VIII.

Fig. 1.—*Allorchestes rupicola;* a.—*anterior gnathopod;* b.—*posterior gnathopod.*

Fig. 2.—*Stegocephalus latus* ; a.—*anterior gnathopod ;* b.—*posterior gnathopod;* c.—*maxillipedes.*

Fig. 3.—*Amaryllis macrophthalmus;* a.—*anterior gnathopod;* b.—*posterior gnathopod;* c.—*mandibles;* *d.*—*maxillipedes*; x.—*posterior pleopoda and telson.*

Fig. 4.—*Neobule algicola ;* a.—*anterior gnathopod ;* b.—*posterior gnathodod.*

Fig. 5.—*Lysianassa nitens ;* a.—*anterior gnathopod ;* b.—*posterior gnathopod.*

Fig. 6.—*Glycera tenuicornis ;* a.—*anterior gnathopod;* b.—*posterior gnathopod;* c.—*second maxillæ ;* d.—*mandible.*

Plate X.

Fig. 1.—*Melita* (?) *Ramsayi;* a.—*anterior gnathopod;* b.—*posterior gnathopod (left.)*

Fig. 2.—*Leucothoë gracilis.*

Fig. 3.—*Leucothoë commensalis.*

Fig. 4.—*Mæra (Gammarus) rubromaculata;* a.—*anterior gnathopod;* x.—*posterior pleopod.*

Fig. 5.—*Mæra spinosa; a.—anterior gnathopod;* b.—*posterior gnathopod.*

Plate XI.

Fig. 1.—*Megamæra Mastersii;* a.—*anterior gnathopod;* b.—*posterior gnathopod;* c.—*posterior pleopoda and telson.*

Fig. 2.—*Haplocheira typica;* a.—*anterior gnathopod;* b.—*posterior gnathopod.*

Fig. 3.—*Megamæra diemenensis.*

Fig. 4.—*Amphithoë cinerea;* a.—*anterior gnathopod;* b.—*posterior gnathopod.*

Fig. 5.—*Microdeuteropus australis;* a.—*anterior gnathopod;* b.—*posterior gnathopod.*

Fig. 6.—*Xenocheira fasciata;* a.—*anterior gnathopod;* b.—*posterior gnathopod;* c.—*maxillipede.*

Plate XII.

Fig. 1.—*Cyrtophium parasiticum;* a.—*anterior gnathopod of ♂;* a ♀.—*anterior gnathopod of ♀;* b ♀.—*posterior gnathopod of ♀;* x.—*telson and two posterior pairs of pleopoda.*

Fig. 2.—*Icilius australis;* a.—*anterior gnathopoda;* b.—*mandible;* c.—*maxillipede.*

Fig. 3.—*Proto novæ-hollandiæ;* a.—*propodos of second pereiopod;* b.—*posterior gnathopod;* c.—*anterior gnathopod.*

Fig. 4.—*Protella australis;* a.—*anterior gnathopod;* b.—*posterior gnathopod.*

Fig. 5.—*Caprella tenuis;* a.—*anterior gnathopod.*

NOTE ON THE *Phyllosoma* STAGE OF *Ibacus Peronii*, LEACH.

BY WILLIAM A. HASWELL, M.A., B.SC.

I have had the opportunity lately of examining a specimen of a glass-crab or Phyllosoma, which seems to be the young of the highly specialised macrourous decapod *Ibacus Peronii*, and, as it is somewhat rare to obtain these larvæ at the stage when—though still essentially Phyllosomæ—they shew unmistakeably to what species they belong, it is perhaps worthy of notice and description.

The specimen, (which was obtained in Port Jackson and is in Mr. Macleay's Collection) is thirteen lines in length and eight in greatest breadth. Its cephalic shield is of quadrilateral form, with the angles rounded off; anteriorly it presents a deep, broad, It is in the structure of the antennæ that this form shews its parentage most unmistakeably. These organs, as in *Ibacus* and the rest of the *Seyllarina*, have the first segment coalescent with the sternum of the antennary somite; on its ventral surface is a perforated tubercle representing the so-called "green-gland" of the adult; the second segment is short and broad; the third has a basal part, of similar form to the second segment, and armed internally with a strong, curved, pointed spine, and an external expanded foliaceous portion, of oval pointed form, and armed along its outer border with three small teeth; the fourth segment resembles the basal portion of the third, and has a similar spine on its inner surface; the terminal segment is phylloid, oval, pointed, armed on its inner border with four strong, triangular, pointed teeth and on its outer with a single obscure denticle. The structure of the antennæ in *Ibacus* is almost precisely similar to this, save that the form of the phylloid expansions is somewhat altered, and the number of teeth on them increased.

The labrum is large and prominent. The mandibles are still membranous. The first maxillæ have the exopodite rather longer than the endopodite, and both armed with several setæ, which are longer on the latter. The second maxillæ are large and foliaceous; the endopodite is a simple, blunt process, with a crenated internal border; the scaphognathite is large, the exopodial portion which is slightly truncate anteriorly, is twice as long as the endopodite; the epipodial part is shorter than the exopodite, broad and rounded. The first maxillipedes are rudimentary consisting of a short process to which three branchial (?) filaments are attached. The maxillipedes of the second pair consist of four segments; their extremity reaches the front of the labrum; the appendage on their second segment is short. The third pair of maxillipedes, which have five articulations, are about five times as long as the second; their appendage is about equal in length to that of the latter.

The thoracic shield is rather longer than broad, and excavated posteriorly. The last pair of thoracic limbs are about two-thirds of the length of the penultimate pair, and provided with a well-developed dactylos.

The abdomen nearly equals the thorax in length; the transverse diameter of its segments is about three times the antero-posterior, the former diminishing slightly posteriorly; the abdominal segments (as also the last segment of the thorax) have each, as in *Ibacus*, a mesial dorsal carina ending on the posterior border in a small conical tooth; the pleura are very prominent, and resemble those of the adult; but they are more strongly curved backwards; those of the penultimate segment have two triangular teeth (represented in *Ibacus Peronii)* on their posterior border. The abdominal appendages have both rami slender and tapering; the endopodite has a small, tooth-like internal process. The form of the telson agrees precisely with that of the corresponding of the diagnosis. These will show how very much there is yet to be discovered on the Australian Coast. At the conclusion of the paper I give a revised list of the Australian Echini known to me, both recent and fossil.

HEMIASTER (RHYNOBRISSUS, Agass).

Test thin, easily separating into hexagonal plates, outline somewhat angular, vertex not central, odd ambulacrum flush with the test. Three independent fascioles, viz., peripetalous, anal, and subanal. Primary tubercles with a raised, flat, scrobicular circle. Spines of abactinal surface short, silk-like, curved; actinal surface long, curved. Posterior lateral ambulacra passing gradually into the actinal surface.

HEMIASTER (RHYNOBRISSUS) APICATUS. n. s.

Test thin, outline from above broadly oval, greatest breadth a little below the lateral ambulacra. *Vertex anterior* a little above the lateral petals. Seen in profile the test is high, swelling roundly outwards for a little way above the anterior ambitus and then slightly receding to the high vertex, whence it slopes very gently, forming a level or almost level elevated ridge to the anal edge, where it is truncated in outward direction to the subanal fasciole, where it slopes inwardly forming an obtuse angle in the middle and terminating in a point at the ambitus. The anal system is an oval shallow depression in the rounder posterior extremity. The opening is vertical, oval, pointed at each end. From regular points at each side ridges extend to the surrounding fasciole where they terminate in small round protuberances. Immediately below this is the subanal fasciole enclosing a broad almost orbicular subanal plastron which is closely covered with secondary tubercles, rather larger, more crowded, and with a well defined scrobicular circle in the lower part. The anal fasciole is narrow, with a wavy inner edge and scarcely apparent above the opening. The subanal fasciole is much better defined, broad above, gradually narrowing below, and joins in a beak the elongate actinal plastron. The central line of the actinal plastron forms an angular keel which is prominent for the posterior half only. The actinal surface is slightly convex and gradually rounded and raised at the ambitus. It is rather flat anteriorly, but slopes upwards from the keel on the plastron posteriorly. At that end it is gradually rounded, and without forming a distinct ambitus passes to the vertical face of the anal end. The actinosome is very large transversly, nearly equalling one-third the width of the test. It is crescentic, the posterior lip a little prominent. The bare ambulacral avenues are connected round the actinosome, forming a bare anterior space extending into an obtuse point on each side of the test and about one-sixth of the whole width from the edge. The anterior lateral phyllodes become narrow gradually from the actinosome and are scarcely apparent near the subanal fasciole.

broad and deeply impressed. It encloses a rhomboidal area which has an obtusely angular anterior apex, a very broad rounded posterior base, and is rounded at the ends of the anterior petals. It re-enters slightly at about the same obtuse angle above and below the anterior petals. All the petals are rather broad, deeply sunken in the middle, and becoming flush with the test at the ends. The depression extends beyond the line of pores at each side. The anterior ones are the shortest. They are at right angles to the mesial line, and extend about half-way to the edge of the test. The posterior petals almost touch at the genital pores. They do not diverge very much posteriorly, and though longer are not quite so deep or so wide as the anterior pair. The pores in all are large, wide, and conspicuous. There are four rows in each petal, quite distinct and separated from each other by a distinct raised broad ridge. There are about 15 pores on each row in the posterior petals, but they become rather faint at the attenuated apical ends. There are 12 in each row in the anterior petals, which are quite distinct, but a little smaller at both the ends, which are rounded and not attenuate. The whole of the test shows uneven undulations, the sutures of the plates are faintly visible in places, and they form a double zigzag diverging line of suture anteriorly from the apex. Long. 64, lat. 58, alt. 35. Posterior petals, long. 19½, lat. 5. Anterior petals, long. 15, lat. 6. Alt. of test at anal end, 30.

This very interesting urchin has been found only at Moreton Bay, where it is sometimes washed ashore. It has never been found alive or with the spines, and being very brittle is nearly always broken in the surf. There is only one other species of the sub-genus Rhynobrissus, which occurs in the Chinese seas. The differences of this species from ours are:— The apex is posterior and not elevated above the rounded outline of the surface. The peripetalous fasciole is oval. The petals are much smaller, narrower, and more divergent. The pores are conjugate. The abactinal tubercles are not uniform, and are larger and more conspicuous, and the whole test smaller and more angular, almost pointed at the greatest diameter. There are of course many other minor differences, but the two species cannot possibly be mistaken for one another.

PHYLLACANTHUS PARVISPINA, n. s.

Test elevated, solid, flattened at each end, but not swollen at the sides. Poriferous zone, slightly undulating, rather broad; ambulacral area with a regular row of miliaries bordering each side, and two or three rows of smaller and less prominent ones in the central area. Primary tubercles, eight, but the two last near the actinosome small and crowded. Mammary boss elevated, with a large perforation, and with a rather deep groove round the neck so as to give a hemispherical surface to the boss, which is raised on a smooth conical mound. Scrobicular area, somewhat squarely oval, margined by an irregular row of secondaries, and shaft is a close series of small granulations in very regular lines, at the base there is a smooth area which thickens gradually up to a small very finely milled ring. The basal socket is broadly concave. The whole of the base is surrounded by a close thatch of short flat spines, and a finer row makes a short flat fringe along the poriferous zones. There are no other spines except the very small ones covering the miliaries which are like scales on the wings of lepidoptera. The whole surface has a smooth and velvety appearance.

The difference of this species from all others is that there are eight primary tubercles, while in *P. dubia* and *imperialis* there are only six, and the number of these, according to Agassiz, is very constant for every age and condition of growth. The spines are entirely different from any described species. The anal system is also quite different in the size of the genital plates, their shape, the shape and size of the madreporiform body, the smallness and position of the openings, the size and disposition of the anal plates, and the whole size, shape, and solidity of the test.

Found occasionally at Botany Bay, Port Jackson, and along the east coast as far as Moreton Bay. The species has been confounded with *Phyllacanthus dubia*, Brandt. So firmly do the spines adhere to the test that they are always washed up quite entire, and any attempt to remove the primary spines either breaks them, or tears away the coronal plate to which they are attached.

Height of adult specimen, 100; diam., 90; width of actinosome, 32; anal system, 28; length of largest primary spine, about 62, width at base, 5, at tip, 2½; length of flat secondaries, about 10, width about 2½, thickness 1 millim. The secondaries are very finely grooved and bevilled at the edge.

The following is a revised list of all the Echini known to me as occurring on the Australian coast. It will be observed that several new habitats are added to the list given by me in 1877, in the second volume of the proceedings of this Society, p. 145 :—

Phyllacanthus annulifera, Lamarck.
  dubia, Brandt, Tasmania, Bass's Straits.
  imperialis, Lam., Manly Beach ?
  parvispina, nobis, Port Jackson to Moreton Bay.

Stephanocidaris bispinosa, Lam., habitat unknown.

Goniocidaris geranioides, Lam., North East Australia, within tropics.
  tubaria, Lam., Tasmania, South East Australia, Bass's Straits.

Diadema setosum, Gray, East Australia, generally within the tropics, but young specimens have been recently dredged up in Port Jackson by Mr. Ramsay. It is common in the Pacific, but its range has never been known out of the

Temnopleurus toruematicus, Klein., all the coasts of Australia, but rare outside the tropics.

Microcyphus maculatus, Agas., East coast of Australia.

zigzag, Agas., extra tropical Australia, and Tasmania.

Salmacis bicolor, Agas., North East Australia, tropics.

sulcata, Agas., North East Australia, not uncommon in Moreton Bay.

rarispina, Agas., North East Australia, tropics.

globator, Agas. I find that this is rather common in Port Jackson. Spines few, scattered, short, stoutish, dull green; violet on the base. The test when fresh is conspicuously marked with pink on the raised edges of the I. and A. spaces, the median sulcus is dull green, and the deep furrows at the coronal sutures (almost like *Temnopleurus*) are white.

Mespilia globulus, Agas. I have reason now to doubt the Australian habitat of this species.

Amblypneustes ovum, Lam., South Australia and Tasmania, rare on East coast.

griseus, Blainville, not known on East coast.

formosus, Valenc., ditto ditto

pallidus, Lam., ditto ditto

Holopneustes porosissimus, Lutken, South Australia and Tasmania.

inflatus, Lutken, Hab. unknown.

purpurascens, Lutk. Probably only a variety of first named species.

Echinus magellanicus, Phillipi. I do not think this occurs in Australia.

angulosus, Agas., South Australia.

darnleyensis, nobis, North East Australia.

Hipponoe variegata, Leske, East Australia, common.

Evechinus chloroticus, Verril, Port Jackson, rare and young specimens only, to which my *E. Australiæ* must be referred.

Fibularia australis, Desmoulins, Tropical Australia?
  volva, Agas., North East Australia, Tropics.

Echinanthus testudinarius, Gray, Port Jackson and East Coast.
  tumidus, nobis, Port Jackson?

Laganum Bonami, Klein., South East Australia and Tasmania.
  depressum, Lesson, East Australia?
Peronella decagonalis, Lesson, East Australia.
  orbicularis, Leske, East Australia.
  Peronii, Agas.
Echinarachnius parma, Lam., Australia generally.
Arachnoides placenta, Linné, North East Australia.
Maretia planulata, Leske, East Australia.
Eupatagus Valenciennesii, Agas., North East Australia only.
Lovenia elongata, Gray, East Australia. The Port Jackson specimens small.
Breynia australasiæ, Leach, East Australia generally.

Explanation of Plate XIII.

Fig. 1.—Hemiaster (Rhynobrissus) apicatus, abactinal system.
,, 2.— ,, ,, ,, half of actinal system.
,, 3.— ,, ,, ,, lateral view.
,, 4.— ,, ,, ,, anterior end.
,, 5.— ,, ,, ,, posterior end.

Plate XIV.

Phyllacanthus parvispina, A. test with spines.
,, ,, B. denuded of spines showing anal system.

On Doris Arbutus, Angas.

By Reginald Bligh Read, M.R.C.S., Eng.

[Plate XVII.]

Branchiæ nine, tripinnate, totally retractile, (Angas, from examination of only one small specimen ·551 in. by ·177 in., thought they were subretractile) united only at base, when extended, the whole assume a melon shape; at first sight they appeared to be united at the summit, but in the tank under a two-inch object glass x 20 diam., were seen to be totally separate.

In addition to the only specimen yet found, that by Angas, I have obtained three, and in the same locality, Coogee Bay, the largest of which measured ·795 by ·374 in. The number of branchiæ is not given by Angas. The stem of the tentacle is perfectly transparent, whilst the summit of the tentacle is deeply divided into about 11 laminæ, coloured white, interspersed with dark brownish spots. A ring of about 24 yellowish, white tipped papillæ surrounds each tentacle. The rim of the retractile cavity of the branchiæ rises, then these are expanded and on its edge are set numerous tubercles arranged in pairs. Of some other of our *Nudibranchiates*, *Angasiella Edwardsi*, is interesting, being placed between *Doris* and *Triopia*. Alder and Hancock mention only two species of *Triopa* in Northern Seas. Here we have *Triopa Yatesi;* whilst *Plocamophorus Imperialis*, of our harbour, differs very little from the only and typical species, *P. ocellatus*, Leuckart found in the Red Sea.

NOTES AND EXHIBITS.

Mr. E. P. Ramsay, F.L.S., etc., exhibited Photographs of Natives of Port Darwin and Port Essington. Also Seven Specimens of a new species of *Sphæria* growing from the larva of a *Pielis* from the Kurrajong; presented to the Museum by Mr. Selkirk.

Mr. Brazier, C.M.Z.S., exhibited a magnificent *Neæra latesulcata* (Woods) obtained at the Heads; also four fine species of Corals from Port Jackson.

WEDNESDAY, MAY 28TH, 1879.

The President, the Rev. J. E. Tenison-Woods, F.G.S. etc., in the Chair.

DONATIONS.

Trans. of the Royal Society of Victoria, Vol. 15.

Trans. of the Zoological Station at Naples.

Trans. of the Royal Society, Tasmania.

Trans. of the Royal Academy of Natural History, Amsterdam, 13 Vols.

PAPERS READ.

ON HETEROPSAMMIA MICHELINII, of Edwards and Haime.

BY REV. J. E. TENISON-WOODS, F.G.S., ETC.

Plate XV.

In the enumeration of the Eupsamminæ (first sub-family of *Madreporaria perforata)* made by Messrs. Edwards and Haime in their Monograph *(Annales des sciences naturelles tom* X. (848,*p.* 89.*)* the genus *Heteropsammia* occurs. This was created by the authors for the reception of certain peculiar corals which they say are always parasitic upon shells, and which they envelope completely, leaving only a small orifice for the head of the molluscs to which they are subsequently indebted for their locomotion. The corals were described simple, erect, fixed on a univalve shell, which they completely enclose, continuing however to enlarge in the basal portion during their lives. There is no epitheca. There are no costa, but the exterior surface is very finely vermiculate so as to be quite velvet-like in appearance. Columella spongy and well developed. Septa thick, a little exsert, closely pressed together.

This genus is placed by the authors in their synopsis of the family, among the first and largest division, that is, the simple corals. The species is thus defined. Corallum very short, with a base wider than the calice, which is shaped in the form of a figure of 8. The shorter axis is the highest part of the margin which re-enters here, and the ends of the longer axis are rounded. The greater axis exceeds the smaller by one-third. Columella well developed, of a finely spongy tissue and of velvetty surface, not projecting from the fossa, which is shallow. Five cycles of septa, those of the three first orders nearly equal, slightly exsert, rather narrow, thick, and of a spongy texture, those of the last cycle larger than the penultimate, thin, uniting two by two close to the columella, internal edge strongly concave about the middle then becoming conspicuously convex below. Alt. 10 millim., major axis 18. minor 4. depth of fossa 3. Habitat Whampoa, China.

New Caledonia, and I find that in a large number of instances the coral is compound. There are two distinct calices often widely separated, but I have every gradation, from the oval calice passing to the figure of 8 outline until it is finally separated by fissiparity.

If we refer to the synopsis of the *Eupsamminæ* as established by Messrs. Edwards and Haime, we find that they have placed *Heteropsammia* amongst the first great sub-division established for simple forms. The second section includes those with an epitheca (*Astroides* only), and those without, which embraces *Dendrophyllia*, (now made also to include *Cœnopsammia*) which increases by buds, *Lobopsammia* fissiparous, and *Stereopsammia*, in which the columella is rudimentary or none.

The question now is whether the genus *Heteropsammia* can be maintained. Naturally there is nothing to distinguish it from *Lobopsammia*. This genus was established to receive the fissiparous compound *Eupsamminæ*. Only two species are known, and these are both Eocene fossils. Messrs. Edwards and Haime make the following observations on *Lobopsammia*. Coral compound. Multiplication by successive fissiparity. Edge of calice irregular. Always four complete and well developed cycles. In all other respects like *Dendrophyllia*. They remark that the genus entirely depends upon the mode of growth, which in *Dendrophyllia* is always by buds, but in this case by the successive division of the calicies which are thus divided into nearly equal portions. The only two known species are then described.

Though there is still a considerable distinction between the fossil genus *Lobopsammia* and *Heteropsammia*, yet I do not see how the latter can be kept distinct, if the former is to include all the fissiparous *Eupsamminæ*. I therefore suggest that the coral of Messrs. Edwards, Haime and Gray, be classified hereafter as *Lobopsammia Michelinii*. It is found in the Chinese Seas, in the Indian Archipelago, on the Barrier Reef, and throughout the

Pacific as far as New Caledonia. In the latter place it would seem to be very common.

The species which I described the year before last as *Heteropsammia elliptica*, (See Proc. Linn. Soc., Vol. II., p. 339. Pl. 6., fig. 3a, b.) I am now convinced should be placed with *Balanophyllia*. Though the peculiar vermiculate exterior is very much like *Heteropsammia* yet the coral is not always parasitic and never in the way described in *Lobopsammia Michelini*. The species must be known therefore as *Balanophyllia elliptica*.

It remains now to enquire what is the nature of those perforations which Mr. Edwards regarded as the mouth of a shell and on which opinion he was followed by Dr. J. E. Gray. In the Natural History Review for January, 1862, (No. V., p. 78.) I find a notice of these corals by the surgeon of H.M.S. "Icarus." His paper is entitled "Observations on some Australian and with porous channels between them. In the Feejean specimens the calice was regular and the exterior surface coarsely granular without any linear disposition like costæ.

At Moreton Bay they dredged at a few fathoms what Dr. Macdonald regarded as another species. The two specimens taken had well-marked costæ, which corresponded exactly with the four cycles of septa.

I have very little doubt from the description and from the figures, copies of which are here given, that the specimens were (some of them) specifically identical with the *Lobopsammia* referred to in this paper. The specimens from Moreton Bay are more like the species of *Psammoseris* described by me* as *P. cylicioides.* I will now give the observations of the author.

"The most remarkable circumstance connected with these polyps, is the invariable presence of a little solitary *Sipunculus* in a beautifully excavated burrow at the base of the corallum. The uniform position of the opening and sinistral direction of this burrow first observed in dead specimens led me to suppose that it was in some way connected with the economy of the polyps themselves, but having discovered its occupant to be one of the coral perforating *Sipunculidæ,* which abound in the South Seas, the riddle was quickly solved. The body of one of these parasites taken from a Bellona Reef specimen, is about three-quarters of an inch in length, terete but gradually increasing in diameter from before backwards, and exhibiting a permanent curvature forwards corresponding with that of the burrow."

On examining a large number of the corals of *Lobopsammia,* I find that Messrs. M. Edwards and Dr. Gray were both in error in supposing that the coral invested a shell. In the first place it would strike any one as a remarkable fact that the aperture is nearly always sinistral,† while the irregular shape would lead one to believe that if derived from an enclosed shell it must have been of many different species. The shape and size of the corallum varies in a very extraordinary degree. But sinistral shells are rare.

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* Proc. Linnean Soc., N.S.W., Vol III., (1878) p. 8.

† Out of 50 specimens, all were sinistral but one.

Again it has not been remarked though I have seen it indicated in drawings, that the side of the corallum was perforated with a line of somewhat irregular minute pores, and there are a number of them scattered all over the surface. On making sections of these corals I have found that the burrows are cylinders of only about a turn and a half, nearly on the same plane. There is no trace of shelly matter, but the perforation is direct into the substance of the corallum. On passing a fine bristle into any of the pores they are found to communicate with the main burrow, no matter how far they may be from it. These would appear to be perforated by the animal by the minute asperities which beset the proboscis, and are disposed serially or irregularly begin to assume a more orderly arrangement, and finally form into closely set rings of minute and recurved hooks reaching to base of the oval tentacula."

Dr. Macdonald adds, this parasite is evidently closely allied to the little animal from the Indian Seas, named *Lithodermis cuneus*, by Cuvier, and which was the only species known to him. He further adds that in the coral borers, which are identical with the little animals here noticed, he found that the œsophagus was encircled by a narrow collar, with a cephalic enlargement on either side, from which tentacular nerves arose, and in contact with which dark eye specks were distinctly visible, there is also a single ventral nervous chord giving off lateral nerves at stated intervals, but without any very apparent ganglionic dilatations. I observed moreover that the cavity of the body was lined with a ciliated membrane, which was reflected round the larger branches of a transparent (probably water) vascular system, running along the spirally coiled intestine, with its singularly constructed central suspensary ligament. All this militates against the supposed *Echinoderm* nature of Sipunculus, and give it radiating affinities with Annelida, Polyzoa and Tunicatà, though perhaps only of a representative kind. The simple anatomy of the larval form, the Atlas of Peron, if it be not indeed a permanent one is also of great importance in this connexion. The editors of the Review also express their opinion that the paleozoic *Pleurodictyon* is a coral perforated in a similar way.

By referring to my figures of *Psammoseris cylicioides* in last year's Proceedings, (Pl. 1.) it will be seen that one of the specimens is clearly burrowed by the same *Sipunculus*, (fig. 2). All the other specimêns were noted on univalve shells much longer than the corallum. Perhaps it is in this way that the animal seeks protection from the boring intruder. I imagine that the asperities on the body of the *Sipunculus* must give rise to filaments of considerable length, because the perforations extend sometimes a long way from the burrow. They are of such extreme fineness that only a very thin bristle will penetrate them.

The coral animal does not seem to suffer from the intruder, but the base is swollen and distorted, sometimes projecting very much at the aperture of the burrow, and often at right angles to the major axis of the calice. In the only specimen in my possession in which the curve of the burrow is not sinistral, the whole base and sides are riddled with the smaller perforations leading from the main passage. I counted no less than 24. As the members of all this family of corals have their walls perforated the filaments probably do no more than to enlarge the openings they find. They have all a radiated circle of laminæ round the outer orifice, like the groovings of the main aperture but much more marked. I have never seen a specimen of *Lobopsammia*, no matter how young or how small without these parasites, and from the subsequent growth it would certainly seem as if the secretion

Fig. 6.—*Lobopsammia Mitchelinii*, Edw. & H., nat. size; h. h. h. lateral perforations; a. aperture.

,, 7.—Ditto, enlarged to show partial fission of calice.

,, 8.—Corallum with two calices established by fission.

ON A NEW SPECIES OF DISTICHOPORA.

BY THE REV. J. E. TENISON-WOODS, F.G.S., F.L.S.

The following species of *Distichopora* has not, I think, been described, at least I can find no record of its description. It is very common I should think in the Islands, as I have seen a good many specimens of it at various times, amongst collections of shells and curiosities from Solomon Islands, between Lat. 5° and 12° S. and Long. 154 and 163 E., and the Penrhyn Islands, Lat. 9° 12′ S. 154° 35′ W. Also from the Marshall Group. I cannot however be sure of the locality in any case, as the information I could procure was not only obtained second-hand, but also in general, vague and indefinite. The species is particularly interesting, as its habit is larger and stouter than *D. coccinea*, Gray, which is our largest species from the Pacific. I have not seen the descriptions of the species dredged by Pourtale in the Atlantic.

DISTICHOPORA LIVIDA, n. s.

Corallum, in stout, solid tufts, three or four inches high, flabellate or twisted, and gnarled like the branches of a tree, not always spreading in the same plane, very solid and compact, livid, tips of branches sometimes yellow or white, lateral furrows and tips of smaller branches bright red or orange. Branches almost cylindrical, stout, rugose, very finely vermiculate, many projecting branchlets, the central stem often disproportionately thicker than the branches and smooth. Lateral furrows conspicuous from their color. Gastropores large, irregular. Dactylopores small, situate on a moderately projecting, broad margin. Style very long and spinous. Ampullæ in slightly swollen, pale, livid masses, in which the separate cells are not easily distinguished.

The position and character of the ampullæ renders it probable that only male stocks have been seen by me since the female gonangia, after the researches of Moseley are in swollen and larger receptacles. At least this is true with regard to *Distichopora violacea*, Pallas, which is the only member of the genus whose soft tissues he was able to examine. It cannot be too often impressed on collectors to preserve such specimens as these in spirits when they are found in a living state. In reality very little is known about this genus which for so long a time puzzled naturalists. Mr. Moseley in his brilliant researches on the family of *Stylasteridæ* has established the connexion of *Distichopora* with those interesting and wonderful Hydro-corallines. The *mode* of

Rumphius which is probably incorrect, as Rumphius calls his species Lithodendrum saccharaceum *rubrum*. Color violet.

Distichopora gracilis, Dana, loc. cit. Color pale rose.

coccinea, Gray, Proc. Zool. Soc., 1860, p. 244. Color blood red with yellow tips.

**rosea*, Saville-Kent, Proc. Zool. Soc., 1871, p. 281. Color deep rose carmine.

livida, nobis. Color livid with orange pores.

I have never seen Dana's species, but the others are common, *D. coccinea* especially.

I am at present engaged on a review of the whole genus, including its bibliography, which I hope to publish shortly. A marked difference between the present species and *D. coccinea* is that the latter has a small line of branchlets projecting at right angles from the main stem, while the stems of *D. livida* are smooth.

NOTES ON THE ANATOMY OF BIRDS.

By WILLIAM A. HASWELL, M.A., B.Sc.

II.—THE LUMBAR AND SACRAL PLEXUSES OF NERVES.*

The *lumbar plexus* is constituted by the three last lumbar nerves.† From the cord formed by the junction of the antepenultimate and penultimate lumbars the *long saphenous* and *obturator nerves* take origin. This cord is then joined by the last lumbar to form the *femoral* or *anterior crural nerve.*

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* In a previous paper on the anatomy of the brachial plexus (Pro. Linn. Soc., N.S.W., Vol. III. p. 409.) I omitted to mention, (1.) that the specialised cutaneous muscle named *expansor secundariorum* by Mr. A. H. Garrod is supplied by a branch from the *internal cutaneous nerve*; (2) that a special slender twig to the *coraco-sternalis* originates from the second nerve of the plexus.

† The determination of the posterior vertebræ—as *lumbar*, *sacral* or *caudal*—is made to depend on their relations to the nerves There is a difficulty in applying this test to the distinguishing of the posterior cervical and anterior dorsal vertebræ—the relations of the nerves of the brachial plexus to the first vertebra bearing a movable rib being quite inconstant.

The *obturator nerve,* after giving off a branch to the obturator internus muscle, passes through the foramen ovale, and finally ends in the substance of the adductor magnus.

The *femoral nerve* gives off branches to the glutei, the sartorius, the vastus externus, the rectus femoris, the pectineus (ambiens), and adductor magnus, in addition to cutaneous branches to the inner side of the thigh and leg.

The *sacral plexus* is formed by the sacral nerves with a branch *(lumbo-sacral cord)* for the last lumbar. The lumbo-sacral cord and the first three sacral nerves join to form a stout anterior cord from which the nerve to the quadratus femoris * (and gemellus?) is derived. The two last sacral nerves join and give off a

The *sciatic nerves* run parallel with the sciatic artery down the thigh. The *internal sciatic nerve* gives off, while in the thigh, a long cutaneous branch to the outside of the leg; it then sends off a communicating branch to the external popliteal nerve, and a little lower down gives off a branch which runs down to the ham, where it bifurcates—one division ending in the gastrocnemius externus, the other passing deeper to supply the flexor perforatus secundus secundi digiti and flexor perforatus secundus tertii digiti. Soon afterwards the main trunk *(internal popliteal nerve)* bifurcates; the outer branch breaks up into numerous twigs for the supply of the inner group of superficial flexors of the toes; the inner sends off (1) a long slender twig which passes down the leg on the surface of the flexor profundus digitorum, and the flexor longus hallucis, and afterwards in contact with the tibia to the ankle, where it becomes cutaneous; (2) branches of supply for the gastrocnemius internus and tibialis posticus muscles; (3) branches to the flexor longus hallucis and flexor profundus digitorum.

The *external sciatic nerve (external popliteal)* gives off in the thigh a branch of supply for the biceps muscle. It subsequently gives origin to a long branch, which, (after passing with the main trunk of the nerve under the ligament of the biceps), runs down to the foot beneath the superficial flexor muscles. A series of branches then radiate from the main trunk of the nerve as it passes beneath the tendon of the biceps in the back of the leg; the first of these passes to the front of the leg, the next two or three supply the two outer superficial flexors, the peroneus longus, the extensor communis digitorum and the tibialis anticus. The main trunk finally divides into two branches which turn round the outside of the fibula to the front of the leg.

Of these, the outer runs superficially over the ankle-joint giving off in its course some small branches to the deeper structures on the front of the tarso-metatarsus, and finally divides at the base of the outer toe, supplying branches to both sides of that digit and the outer side of the middle. The other, after passing under the ligament which binds down the tendon of the tibialis anticus to the tibia, divides into two branches, which again re-unite after one of them has perforated the tendon of the tibialis anticus close to its insertion; the nerve then again divides into several twigs of which one goes to supply the surface of the middle toe and the outer surface of the second, a second supplies the adjacent sides of the hallux and second, a third the inner side of the hallux and the inner surface of the tarso-metatarsus, while a fourth turns round the inner border of the latter bone and enters the sole.

III.—The Myological Characters of the Columbidæ.

It is only of very late years that the characters afforded by the muscular system have been applied to throw light on the classification of Birds. Wiedemann (*Anatomie und Naturgeschichte der Vögel*, 1810.) was the first to call attention to some of the

M. Edmond Alix in his "*Essai sur l'appareil locomoteur des Oiseaux*" (1874), in addition to a minute account of the muscular system in general, gives a description of the differences in the arrangement of the long flexors of the toes in various birds, and refers to a few other varieties in the Myology.

The present paper is intended as a slight contribution to our knowledge of this subject—consisting of a summary of the most important points ascertained by a study of the myology of the Pigeon family, a group whose anatomy appears to have been singularly neglected. In the anatomy of the muscles of which no mention is made in the following descriptions there is nothing specially characteristic to be observed.

a.—Muscles of the Anterior Extremity.

1.—The *latissimus dorsi*, in all the genera of the family which I have examined is specially remarkable on account of its being devoid of any trace of a posterior belly—a character in which, so far as I have accertained, the Columbidæ are distinguished from all other groups of birds (including the columbiform *Didunculus*).

2.—The *levator anguli scapulæ* arises from the first three ribs, or the second, third and fourth, with their transverse processes, and is not connected with the transverse processes of the posterior dorsal vertebræ, as in most other birds.

3.—The *biceps flexor cubiti* arises as usual by two heads, a a coracoidal and a humeral; these blend completely towards the middle of the arm; but there are two distinct tendons of insertion—one attached to the head of a radius, the other to the coronoid process of the ulna. This arrangement is not an uncommon one, and is found in widely differing genera (e.g. *Athene, Grallina).* It serves, however, as an important point of distinction from various families of birds: thus certain families (*Laridæ, Chionidæ, Scolopacidæ*), have the muscle divided into two parts—corresponding to the coracoidal and humeral heads in the arrangement above described,—which remain separable from origin to insertion; again in other cases (e.g., *Anatidæ* and *Gruidæ*), one of the terminal tendons is inserted into the head of the radius and the other bifurcates to become attached to both radius and ulna.

A further peculiarity of this muscle in the *Columbidæ* is that it gives off a broad quadrilateral offset to aid in the extension of the anterior alar fold. A vermiform muscle with a similar function and more intimately related to the biceps is to be found in most, if not all, Waders, and many Natatores (*Phalacrocorax, Larus, Anatidæ*), but *Didunculus strigirostris* is the only bird that resembles the *Columbidæ* in the flat expanded form of this *tensor accessorius* as it may conveniently be designated.

4.—The *tensor membranæ anterioris alae* consists of two separate muscles—the *tensor longus* and *tensor brevis*. The *tensor longus* has two distinct separate heads of origin; the one consists of a broad and flat fleshy belly, which takes origin from the approximated insessorial birds, and the nocturnal Raptores; it distinguishes these, however, from the wading and swimming orders, in which the bellies of these two muscles are separable from one another.

b.—Muscles of the Posterior Extremity.

1.—The *gluteus externus* is absent. This seems to be characteristic, besides the present group and its allies, of the Parrots, Kingfishers Cuckoos, and the Passerines.

2.—The *adductor brevis*, *adductor longus*, *semimembranosus*, *semitendinosus* and *accessory semitendinosus* are all present. The significance of these muscles has been pointed out by Mr. A. H. Garrod.*

3.—The *Ambiens (Pectineus)* and the *flexor perforatus digitorum* have a peculiar and characteristic arrangement in this family. In several genera of *Columbidæ* as Mr. Garrod has pointed out† the *ambiens* is altogether absent: where it is present, as occurs in the majority of genera, its tendon on reaching the back of the leg, in place of breaking up and losing itself among the fleshy fibres of the superficial flexors, maintains its consistency, and joins a strong tendon which, arising from the fibula, passes into a small muscular fasciculus—the accessory or fibular head of the *flexor perforatus secundus tertii digiti*. Such a definite relation of the distal tendon of the *ambiens* to one special muscle is rare, if not exclusively characteristic of the present group. In certain *Anseres (Erismatura, Casarca)* however, an arrangement which, though more complex, has a certain analogy with the above, is to be observed: here the tendon of the *ambiens* after becoming connected by a tendinous band with the head of the fibula, divides into three parts, each of which developes a little muscular slip becoming connected, one with the *flexor perforatus primus secundi digiti*, the second with the *flexor perforatus primus tertii digiti*, and the third with the *flexor perforatus quarti digiti*.

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*"On certain Muscles of the Thigh in Birds and their value in Classification," P Z S., 1873, pp. 626—644, and 1874, pp. 111—123.

†"On some points in the Anatomy of the Columbæ," P.Z.S., 1874, pp. 249—259.

4.—The tendon of the *flexor profundus digitorum* is united for a short distance in the sole, by means of tendinous fibres, with that of the *flexor longus hallucis*.

5.—A small muscle representing the *lumbricales* of mammals takes origin from the under surface of the tendons of the flexor profundus near the point where they separate, and divides anteriorly into two pointed processes, which become inserted into the proximal end of the cartilaginous sheath containing the flexor tendons of the second and third toes. This muscle seems to have hitherto escaped the notice of anatomists; so far as I have been able to ascertain it is peculiar to the Pigeons.

To sum up, the following are the points in the myology of the *Columbidæ* which seem to be specially characteristic of the family :—

they were Comatulæ without arms. I am now convinced that this explanation of these bodies is the correct one. They are the central disks of some unknown species of Comatulæ. I have seen a central disk of an undescribed species, which though much smaller and with very much fewer pores, yet is so similar in all other respects that I do not doubt my *Euktiminaria ducalis*, the *Glenotremites paradoxus* of Goldfuss, the *Decamerus mysticus* of Hagenow, are all central disks of Comatulæ. The central pores on each of these organisms which bear so close a resemblance to the cells of Polyzoa are doubtless connected with the water circulation, like the madreporiform bodies in the Echinodermata. They are not present in all the Comatulæ, at least in this form.

ON *Heterodontus galeatus*.

BY WILLIAM MACLEAY, F.L.S., &c.

At our last Monthly Meeting Mr. Masters exhibited a young specimen of that very rare shark, *Heterodontus galeatus*, caught in Port Jackson a few days before. It has been my good fortune to become the possessor within the last few days of another, and a very fine specimen of the same Fish. The specimen in question was taken in a net at Camp Cove, Port Jackson, by Hastie the Fisherman. It was an adult female of unusual size and in a perfectly uninjured state. When I say unusual size, I mean of course when compared with the very few specimens as yet known or seen. The total length was 3 feet 6 inches, the length of the head, measuring to the first gill opening—9 inches, the breadth of the head 9½ inches. The circumference or girth of the head at the middle of the supraorbital ridges measured 2 feet, and the girth of the body in front of the first dorsal fin was exactly the same measurement. The distance from the snout to the commencement of the first dorsal was 15 inches, the expanse from tip to tip of pectoral fins 2 feet 1 inch, and the width of the mouth 6 inches. The prevailing colour of the upper part is a sericeous brown, with black patches as represented in Plate 25, Vol. III. of our Proceedings, but these patches, though very black, are not by any means well defined, as they get gradually blended into the brown. The teeth were of a beautiful clear pinkish red, excepting the tips of the central cusps of the front teeth and the longitudinal ridge of the back teeth which were colourless and pearly. The stomach and bowels were well filled with small fragments of *Echini* which had been evidently swallowed in numbers, spines and all. The ovaries were full of ova in different stages of development, the largest over 1 inch in diameter, and of a greenish colour; the smaller ones mostly yellow. There was no appearance of anything like the formation of the egg-case, nor did the oviduct appear to have ever been occupied. The animal was altogether thoroughly healthy, there were no Entozoa nor indeed Parasites of any kind, except two specimens of a leech fastened on the palate. The dorsal spines were very strong and flattened above, presenting the appearance of having been much worn down. From this circumstance, coupled with the nature of

WEDNESDAY, JUNE 25TH, 1879.

The Hon. William Macleay, M.L.C., F.L.S., in the Chair.

W. H. Archer Esq., was elected a Member.

DONATIONS.

Journal of the Royal Microscopical Society, Vol. II., part 2.

Transactions of the Philosophical Society of Adelaide for 1877—78.

Native Plants of Victoria by Baron F. von Mueller, K.C.M.G.

PAPERS READ.

NOTES ON SOME RECENTLY DESCRIBED BIRDS FROM THE SOLOMON ISLANDS, with remarks on some Australian birds mentioned in Mr. R. B. Sharpe's Cat. of Bds., Vol. IV.

BY E. P. RAMSAY, F.L.S., C.M.Z.S. &c.

MONARCHA RUFOCASTANEA, *Ramsay.*

Since describing this Flycatcher from the Solomon Islands, I find a note, in Sharpe's Cat. B. IV., p. 376. (just received) and a figure, relating to the *M. castaneiventris* of Verreaux; *(Pomarea castaneiventris,* of Sharpe's Cat. Vol. IV., p. 435.) although my species is very much smaller, it agrees well with Mr. Sharpe's description in coloration. It appears that this bird is only known in Europe by a single skin, in the British Museum, and the habitat given is "*Oceania.*"

Ornithologists will be glad to learn the more definite habitat of this fine species, and also to know that it is by no means rare on the Island of "Gaudalcanar." This bird had hitherto been confounded with *Myiagra castaneiventris*, of Finsch and Hartlaub;

(Fauna centralpolyn: p. 93.) which is quite a different bird, and which is identical with *Myiagra vanikorensis*, Cassin, U. S. Expl. Exped., p. 148. (See Sharpe's Cat. of Birds, Vol. IV., p. 376.)

GRAUCALUS SOLOMONENSIS.

Graucalus pusillus, *Ramsay, P.L.S. of N.S.W., Vol. IV., p.* 71.

As the species name "*pusillus*" has already been employed for more than one species of the *Campophagidæ* I propose to change the specific name of this bird as above.

It comes very near to *G. lineatus*, Swains, and *G. maforensis*, Meyer; but differs both in size and in the markings on the undersurface, but chiefly in the different coloration of the sexes.

MACROPYGIA RUFOCASTANEA, *sp. nov.*

Macropygia, sp.; Ramsay, P. Linn. Soc. of N.S.W., Vol. IV. p. 73.

it is not improbable that it will prove to be only a phase of plumage of *M. Mackinlayi*, although in the type specimen the bill is stouter; the coloration in all the species of *Macropygia* I have met with varies considerably with age, and also frequently in the sexes.

CAMPOPHAGIDÆ.

In Mr. Sharpe's Cat. of Bds., Vol. IV., I find our *Campophaga Jardinii* of Gould, the *Graucalus tenuirostris* of Jard., placed in the genus *Edoliisma*, a genus created for the reception of *E. milan* by Jacquinot and Pucher, Voy. au Pôle Sud., Zool. Ois. p. 69., 1853. The genus *Lalage*, (Boie, Isis 1826, p. 973.) is used for all our small *Campophagidæ*. Under the genus *Symmorphus*, closely allied to *Lalage*, are two species, but neither descriptions agree with specimens from New Hebrides and New Caledonia in the Australian Museum. If Mr. Sharpe has taken his descriptions from really adult birds, then there is undoubtedly a third species yet to be described, but it is not improbable that Mr. Sharpe's description of the ♂ of *S. nævius* is from an immature bird, and probably a ♀.

A specimen in the Museum Collection from the New Hebrides, an adult ♂, received in spirits, agrees with the description of *S. leucopygius*, ♂, except in the lores which are uniformly black, in the *whole* of the under surface the cheeks and under wing-coverts being white, and the rump of an ashy grey tint; adult males (*S. nævius ?*) from New Caledonia have the upper tail coverts white, and the head, neck, wings, back, and tail black, like the New Hebrides bird.

Mr. Sharpe has cleared up the mystery respecting *Lalage leucomela*, vel *L. leucomelæna*, the *Campophaga leucomela* of Vigors and Horsfield.

I find as synonyms of this species *Lanius karu*, Less. and Garn. *Campophaga karu*, Gould, Bds. Aust. II. pl. 61; *C. rufiventris*, Gray

C. polygrammica, Gray, and many others. *Lalage humeralis*, of Gould takes the older name of *Lalage tricolor*, the *Ceblepyris tricolor* of Swainson.

MUSCICAPIDÆ.

PETRŒCA LEGGII, *Sharpe.*

Under this name I find our common scarlet breasted robin, the *Petroica multicolor* of Swainson; (*nec.* Gmelin). It appears that the true *Petroica multicolor* of Gmelin, the *Red bellied Fly-catcher* of Latham, is the Norfolk Island bird, *Muscicapa erythrogaster* of Latham, and *Petroica erythrogastra* of Gould's Bds. Aust., fol. Vol. III., pl. 4.

PETRŒCA RAMSAYI, *Sharpe.*

A new species distinguished from *Petræca goodenovii*, (*Vig. and* good species will also come under this division, with *Gerygone insularis*, Ramsay, from Lord Howe's Island.

Next comes an Australian new genus, *Heteromias*, created for the *Pæcilodryas ? cinereifrons*, Ramsay; this is a peculiar anomalous form allied to the *Pachycephalalinæ* and the Wood-robins, *Pæcilodryas*.

Under *Pæcilodryas* of Mr. Gould are placed the Australian species *P. cerviniventris*, *P. superciliosa*, *Eopsaltria capito*, of Gould, and *Eopsaltria nana* of Ramsay. I cannot see the affinity of the two last with the genus *Pæcilodryas* of Gould.

MALURUS GOULDI, *Sharpe*.

Among the *Maluridæ*,—Australian Wrens,—the only correction I find is that the *Malurus longicaudus* of Gould is not identical with the bird under that name mentioned by Temminck, (Man. d'Orn. 1820, p. lxviii., see Sundeval Ann. and Mag. Nat. Hist. xviii., 1846. p. 252—3). The Tasmanian bird then, which also occurs in South Australia and Victoria, (the *M. longicaudatus* of Gould,) will be known as *Malurus gouldi*, Sharpe.

MALURUS DORSALIS, *Lewin*.

This is the *Sylvia dorsalis* of Lewin, Bds. of New Holl., pl. 14. the *Malurus brownii*, of Vig. and Horsf., and the *M. cruentatus* of Gould.

A large series of specimens in the Australian Museum tend to prove that so far from them being three distinct species, they may all prove to belong to one and the same species. The N. S. W. *M. melanocephalus* are the lightest colored and have more of an orange tint in the crimson of the back; those from Rockingham Bay, and the Gulf of Carpentaria, are a little smaller, and of a darker tint, while those from Cape York, Port Essington, and Port Darwin, are the smallest and darkest, the wings are more or less brown in the younger birds, and become more or less *black* in the adults of those found north of Rockingham Bay. There are several species of New South Wales birds represented in North Australia by species differing only in intensity of coloring and size; for instance *Pitta strepitans*, *Lopholaimus antarcticus*, *Carpophaga magnifica*, *Astur novæ-hollandiæ*, *Malurus lamberti.*

RHIPIDURA.

Under this genus the Tasmanian form of *R. albiscapa*, is very properly separated into a distinct species, under the name of *Rhipidura saturata.* It is probable however, that this name will not stand, having been used by Salvadori* already for *R. maculipectus* of Gray. I therefore propose to distinguish this bird under the name *R. sharpei.* *R. saturata*, Salvadori, is from Salvatti.†

RHIPIDURA TRICOLOR, *Vieillot.*

This proves to be the oldest of the numerous specific names given to our *Rhip. motacilloides* of Vig. and Horsf.; pl. 86 of these localities are quite distinct and must retain the names given to them by Gray and Gould.

M. leucotis, Gould, is also placed in the Genus *Piezorhynchus*.

Under *Monarcha*, the Australian species described are *Monarcha melanopsis*, the *Muscicapa melanopsis* of Vieillot,—the *M. carinata* of Vig. and Horsf., and of Gould's Birds of Aust., Vol. II., pl. 95.

Unfortunately an error occurs here, the young bird of *M. melanopsis* being described as a female—in the adults *both sexes* are alike in plumage.

Monarcha canescens, Salvadori, a new species, said by D'Albertis, to come from Cape York, most probably a New Guinea bird, in coloration it is closely allied to the preceding.

It will be seen I have only referred to the Australian species in Mr. Sharpe's Catalogue, as being of most interest to ornithologists here; and taking into consideration the poor material he has had to work from, the greatest praise is due to Mr. Sharpe's ability and untiring energy. I am sure all ornithologists will congratulate Mr. Sharpe on the appearance of the fourth Volume of his work "Catalogue of Birds" and trust the learned author may have long life and health to complete so great an undertaking.

ON SOME ADDITIONAL NEW GENERA AND SPECIES OF AMPHIPODOUS CRUSTACEANS.

BY WILLIAM A. HASWELL, M.A., B.Sc.

[Plates XVIII.—XXIV.]

GROUP NORMALIA.

FAM. ORCHESTIDÆ.

Genus ALLORCHESTES, Dana.

Allorchestes niger, *sp. nov.*

Eyes round. Superior antennæ nearly as long as the cephalon and the first two segments of the pereion; first joint of peduncle short, about half the length of the cephalon; second and third shorter; flagellum of nine articuli. Inferior antennæ twice as long as the superior pair; flagellum much longer than peduncle, the articuli nearly twice as broad as long at the proximal end, becoming narrower and longer towards the extremity; setæ few and short. Anterior gnathopoda with a lamellar, hair-bordered process on the carpus; propodos ovoid, twice as long as broad, palm short, oblique, with a defining spine. Posterior gnathopoda with the carpus small, triangular; the propodos irregularly heart-shaped with the palm oblique, defined by a triangular tooth, and armed with a row of spines; the dactylos with a small tooth at its base on the inner side. Pereiopoda subequal, with a few setæ on the borders of the segments. Colour blackish purple or brown. Length one-fifth in.

Hab. Among sea-weed on Clark Island, Port Jackson; common.

segments of the pereion ; first segment of the peduncle stout, half as long as the cephalon ; second segment longer and narrower than the first, ending distally in an upper, longer, and a lower, shorter, blunt tooth ; third segment similar to the articuli of the flagellum ; flagellum equal in length to the peduncle. Inferior antennæ about equal in length to the superior pair, inserted considerably behind the latter ; second joint of the peduncle the longest ; flagellum shorter than the last segment of the peduncle, of four or five articuli. Mandibles with a three-jointed palp ; the incisive edged armed with eight conical teeth. Maxillipedes with the dactylos long, pointed. Anterior gnathopoda having the carpus triangular, its distal and inferior angle produced and armed terminally with a few spines ; propodos ovoid, narrowed distally, longer than the carpus, palm not defined ; dactylos slender, acute, about two-thirds of the length of the propodos, its inner border armed in about a half of its extent with fine denticles. Posterior gnathopoda with the ischium, meros, and carpus, each produced distally and inferiorly ; ischium short, its process longer than its body, gently curved, armed with one or two setæ ; meros a little longer than the ischium, its process very short, armed at the extremity with a few setæ ; carpus large, the infero-distal process longer than the body, pointed and nearly straight, armed internally with a row of setæ ; propodos a little longer than the process of the carpus, oblong, twice as long as broad ; dactylos short, stout. Pereiopoda subequal, slender, the basa very narrow. Three posterior pairs of pleopoda biramous, devoid of setæ, the rami styliform, slender, pointed and slightly curved. Telson sub-conical, laterally compressed, subacute. Colour light pink, with minute brown and red dots forming a lobed pattern on the coxæ. Length 3/20ths in.

Hab. Clark Island, Port Jackson, amongst sea-weed at low-water mark.

Cyproidia lineata, *sp. nov.* (Pl. XVIII., fig. 2.)

Body very convex. Lateral plates rather deeper than the pereion ; the division between the two constituent coxæ geniculate.

Cephalon with a slight rostral prolongation. Posterior segments of the pleon compressed. Eyes large. round, red. Superior antennæ as long as the cephalon and the first three segments of the pereion; peduncle stout, the second segment produced above into a strong tooth at the distal end; flagellum longer than the peduncle, tapering, of about seven articuli. Inferior antennæ rather longer than the superior pair; peduncle and flagellum subequal. Anterior gnathopoda with the propodos oblong, more than twice as long as broad, the palm oblique. short, armed with a few very short hairs. Posterior gnathopoda with the carpus produced infero-distally into a prominent, distally rounded process armed terminally with a few hairs; propodos ovate, narrowed distally, palm oblique, defined by the distal process of the carpus, armed with a few short bristles. Pereiopoda subequal, slender. Last three pairs of pleopoda successively decreasing in length posteriorly; rami short, pointed, unarmed. Telson very large,

Genus Lysianassa, Edwards.

Lysianassa australiensis, *sp. nov.* (Pl. XVIII., fig. 3.)

Resembles *L. nitens*, mihi, but has the eyes smaller, and the propodos of the posterior gnathopoda narrower, with the dactylos rudimentary.

There are two varieties of this form, the one with the inferior antennæ short, and the other with these organs as long as the body; but I am unable to state whether or no these may be sexual characters.

Hab. Port Jackson (common).

Sub-fam. STEGOCEPHALIDES.

Genus Montagua, Spence Bate.

Montagua Miersii, *sp. nov.* (Pl. XXIV., fig. 4.)

Coxæ of the posterior gnathopoda and the two first pairs of pereiopoda much deeper than their respective segments. Superior and inferior antennæ subequal in length, equal in length to the cephalon and first three segments of the pereion; the peduncles stout, rather shorter than the flagella. Anterior gnathopoda small, the propodos subquadrate, the palm nearly transverse. Posterior gnathopoda with the propodos large, cordiform; the palm oblique, undefined. Pereiopoda subequal, rather stout. Colour yellow with brown markings. Length about 3/20ths in.

Hab. Port Jackson.

I have named this species after Mr. E. J. Miers, F.L.S., of the British Museum.

Montagua longicornis, *sp. nov.* (Pl. XXIV., fig. 5.)

Coxæ scarcely so deep as in the preceding species. Superior antennæ as long as the cephalon and pereion. Inferior antennæ a little shorter than the superior. Anterior gnathopoda with the propodos very small, subquadrate, the palm nearly transverse.

Posterior gnathopoda with the propodos long-ovate; palm undefined, fringed with long hairs. Length about 3/20ths in.

Hab. Port Jackson.

SUB-FAM. PHOXIDES.

Genus ŒDICERUS, Kröyer.

Œdicerus latrans, *sp. nov.* (Pl. XIX., fig. 1.)

Rostrum curved downwards, acute. Eyes oval, very large. Antennæ subequal, as long as the cephalon and first two segments of the pereion. Superior pair with the peduncle short, stout, the first segment much larger than the other two; flagellum more than twice as long as the peduncle. Inferior pair with the peduncle stout, the third, fourth and fifth segments subequal, short; flagellum more than twice as long as the peduncle.

Œdicerus arenicola, *sp. nov?* (Pl. XXIV., fig. 3)

Cephalon slightly produced. Third and fourth segments of the pleon with an obscure longitudinal ridge in the middle dorsal line. Eyes rather small, round. Superior antennæ as long as the cephalon and the first four segments of the pereion; peduncle stout; flagellum subequal with the peduncle, of 15 articuli. Inferior antennæ about equalling the superior in length; flagellum and peduncle subequal, the former composed of 14 articuli. Gnathopoda subequal, hairy, larger in the male than in the female, the carpus in both pairs subtriangular, produced at its inferior and distal angle, rather larger in the posterior pair; propodos ovate, dactylos rather more than half as long as the propodos; palm not defined. Two first pairs of pereiopoda foliaceous, dactylos absent; third and fourth pairs subequal, similar to the first and second, but with the basos broader, and with a very small, conical dactylos; fifth pair very long, the distal segments slender, armed with a few short setæ. Posterior pleopoda having the rami narrow, ovate, bordered internally toward the apex with slender hairs. Length 3/10ths in.

Hab. Shark Island, Port Jackson; found burrowing in sand above high-water mark.

Seems to resemble closely the *Œdicerus fossor* of Stimpson; and may prove to be identical with that species.

Genus UROTHOË, Dana.

Urothoë pinguis, *sp. nov.* (Pl. XIX., fig. 2.)

Body very thick. Eyes small, reniform. Superior antennæ as long as the cephalon and first segment of the pereion; peduncle very stout, first segment the largest, third very small; flagellum as long as the peduncle, of fifteen articuli; appendage two-thirds of the length of the flagellum, composed of ten articuli. Inferior antennæ longer than the superior pair; peduncle very thick, fourth joint the largest, fifth about two-thirds of the length of the fourth and more slender, both fringed below with long hairs;

flagellum as long as the two last segments of the peduncle. Mandibles with a broad foliaceous palp. Maxillipedes with a strong dactylos and with small, spine-fringed, squamiform plates on both basos and ischium. Gnathopoda large; anterior pair with the carpus three-fourths of the length of the propodos; the propodos ovoid, swollen; the palm not defined; the dactylos half as long as the propodos; posterior pair larger than the anterior, carpus small, subtriangular; propodos ovate, palm defined by a prominent angle; dactylos rather more than half as long as the propodos. First two pairs of pereiopoda subequal, sub-foliaceous, the basos about thrice as long as broad, the meros ovate, hairy; the carpus broad, with a slight angular projection on its posterior border to which are attached a number of long hairs; propodos nearly equal in length to the carpus, narrow; dactylos small. Third pair with its coxa extending forward nearly to the anterior boundary of the fourth segment; basos broader at its distal than

Genus IPHIMEDIA, Rathke.

Iphimedia? ambigua, *sp. nov.* (Pl. XXIV., fig. 2.)

Cephalon with a long, pointed rostrum. First segment of the pereion broad; the second to the sixth, inclusive, very narrow, the seventh and the first three segments of the pleon very wide; the seventh segment of the pereion and the first three segments of the pleon each armed with an acute spine on each side near the middle dorsal line, and another at the postero-lateral angle; third segment armed in addition with an acute, curved spine situated between the lateral angle and the dorsal spine. Coxæ of the gnathopoda and the two anterior pairs of pereiopoda deep, that of the second pair of pereiopoda excavated behind for that of the third pair, the latter together with the two following pairs with a spine-like posterior angle. Antennæ subequal, the inferior pair rather longer than the superior. Anterior gnathopoda slender, filiform. Posterior gnathopoda slender, sub-chelate. Basos of the third pair of pereiopods armed on the posterior border with an acute spine near the proximal end; basos of the fourth pair with two short spines, that of the fifth pair with the posterior border serrate and armed with an acute spine near its distal extremity. Last pair of pleopoda biramous, the inner ramus longer than the outer, bi-articulate. Telson scale-like, entire. Colour red with brown dots. Length 3/30ths in.

SUB-FAM. GAMMARIDES.

Genus ATYLUS, Leach.

Atylus monoculoides, *sp. nov.* (Pl. XVIII., fig. 4.)

Eyes very large, nearly meeting above. Superior antennæ as long as the cephalon and first six segments of the pereion; first segment of the peduncle rather shorter than the cephalon, stout; second narrower and shorter, third scarcely distinguishable from the articuli of the flagellum; flagellum nearly twice as long as the peduncle; articuli broader than long at the proximal end, longer than broad distally, each armed with fasciculi of setæ both above and below, every second articulus slightly expanded at its infero-distal angle and tipped with auditory cilia. Inferior antennæ rather shorter than the superior pair; third joint of peduncle short, very stout, fourth and fifth subequal, the latter rather narrower than the former; flagellum as long as the last two segments of the peduncle; articuli very much broader than long at the proximal end, becoming longer than broad towards the extremity. Maxillipedes with a well-developed squamiform plate on the ischium and a smaller one on the basos. Gnathopoda equal, similar, the propodos ovoid, narrower distally than proximally, the palm not defined. Pereiopoda short and stout, bordered with fine setæ, the two last pair rather longer than the third. Last three pairs of pleopoda with slender, acute, styliform rami, armed with a few fine setæ and slightly curved at the apex. Telson triangular, blunt, cleft in rather more than half its length.

hairs on the meros, carpus and propodos; propodos ovate; palm undefined. Rami of posterior pleopoda foliaceous, serrated on the borders, the serrations armed each with one or two short setæ. Telson triangular, truncate, cleft in rather more than half its length. Length ¼ in.

Hab. Clark Island, Port Jackson.

This species is characterised mainly by the irregular form of the eyes, and the shortness of the peduncles of the antennæ.

Leucothoë novæ-hollandiæ, *sp. nov.* (Pl. XX., fig. 2.)

Body thick. Pleon considerably shorter than the pereion. Cephalon small; first segment of the pereion very broad, tumid. Eyes oval. Superior antennæ a little longer than the cephalon and first segment of the pereion; first two segments of peduncle subequal—the second slightly longer than the first—the third about one-third of the length of the second; flagellum as long as the last two segments of the peduncle, very slender. Inferior antennæ subequal with superior; flagellum very slender, rather longer than the last segment of the peduncle. Maxillipedes with a strong dactylos and well-developed squamiform plates—those of the basa united together in the middle line. Anterior gnathopoda large, complexly subchelate; carpus much larger than the propodos, irregularly triangular—the proximal (apical) and superior angles rounded off, the infero-distal angle produced into an incurved pointed process, about one-half as long as the rest of the segment; propodos less than two-thirds of the length of the carpus, rather longer than broad, terminating in a straight edge, its dorsal border concave, ventral convex and closely applied to the infero-distal process of the carpus; dactylos absent. Posterior gnathopoda simply sub-chelate, with a small meros, a subtriangular carpus, slightly produced at both of its distal angles; the propodos large, more than twice as long as broad, its dorsal border convex in its proximal two-thirds, concave near the distal end, ventral border slightly convex; palm oblique, slightly excavated, armed with a varying number of blunt teeth; dactylos more than half as long as the propodos. First and second pairs of coxæ as deep as their respective segments; third and fourth rather deeper; fifth scarcely half as deep as the fourth. Three posterior pairs of pereiopoda subequal, rather short. Fourth pair of pleopoda longer than the fifth and sixth; fifth and sixth subequal, with short, styliform, slightly curved rami. Telson triangular, blunt. Colour light pink, nearly white. Length ¾ in.

Genus HARMOMIA *(novum)*.

Coxæ not so deep as their respective segments. Superior antennæ with an appendage. Inferior antennæ longer than the superior pair. Mandibles with a palp. Maxillipedes unguiculate sub-pediform, provided with a squamiform plate on the basos only. Gnathopoda subchelate, unequal, posterior pair very large. Pereiopoda stout. Posterior pleopoda biramous, the rami short, conical. Telson single, elongate.

anterior pairs of pereiopoda subequal; three posterior pairs with the basa oblong, twice as long as broad, the other joints very broad, the dactylos very stout; fourth pair smaller than the fifth and sixth. Rami of the fourth pair of pleopoda as long as the protopodite; those of the fifth pair shorter; those of the sixth pair very short, conical, armed with a few straight setæ. Telson simple, conical, compressed. Colour brown. Length 3/20ths in.

Hab. Clark Island, Port Jackson.

Genus Eusirus, Kröyer.

Eusirus dubius, *sp. nov.* (Pl. XX., fig. 3.)

Last segment of the pereion with a median posterior spine. First two segments of the pleon each with five spines; fourth and fifth segments strongly keeled, the keel ending behind in an acute tooth. Eyes round. Superior antennæ equalling in length the cephalon and first three segments of the pereion; first segment of the peduncle compressed from above downwards, nearly as long as the cephalon; second much shorter; third scarcely distinguishable from the articuli of the flagellum. Flagellum longer than the peduncle, with a well-developed secondary appendage. Inferior antennæ half as long as the body; the peduncle longer than the superior pair; third segment very short; the others long, the fifth rather longer than the fourth; flagellum slightly longer than the last segment of the peduncle. Maxillipedes with a strong pointed dactylos, devoid of squamiform plates. Anterior gnathopoda with the carpus closely applied to the propodos, having a palmar process armed with a bunch of hairs; propodos ovate, longer than the cephalon. Posterior gnathopoda larger than the anterior pair, the carpus and propodos of a similar form; the latter longer than the cephalon and first segment of the pereion. Pereiopoda very long, the two anterior pairs slender, the others broad, with the basa oblong, serrated behind. Posterior pleopoda slightly shorter than the fifth pair, the rami broad, lanceolate, serrated. Telson as long as the protopodite of the posterior pleopoda, deeply cleft; the halves compressed, ending each in two acute spines, of which the outer is much more prominent than the inner. Length about ½ in.

Hab. Tasmania. (Macleay Museum.)

This species probably approximates near enough to *E. cuspidatus* and *E. Helvetiæ* to be placed in the same genus; although the form of the maxillipedes appears to be rather different.

Genus Mœra, Leach.

Mœra dentifera, *sp. nov.* (Pl. XX., fig. 4.)

Superior antennæ equal in length to the cephalon and first four segments of the pereion; third segment of the peduncle two-thirds of the length of the second; flagellum as long as the last two segments of the peduncle, of about ten articuli, each ornamented,

Mœra hamigera, *sp. nov.* (Pl. XXI., fig. 1.)

Superior antennæ as long as the cephalon and pereion; second segment of the peduncle longer and narrower than the first; third half the length of the second; flagellum nearly as long as the peduncle; appendage of four articuli. Inferior antennæ as long as the first two segments of the peduncle of the superior pair; flagellum longer than the last segment of the peduncle. Anterior gnathopoda small; propodos ovate, hairy; palm not defined. Posterior gnathopoda unequal; left a little larger than the anterior, and of similar form; right very large; meros produced infero-distally into a short pointed prominence; carpus sub-triangular; propodos four times as long as the carpus, slightly broader distally than proximally, greatest breadth about half the length, upper and lower borders nearly straight; palm oblique, with three irregular teeth, the defining one sub-acute, the others blunt; dactylos short, hooked. Posterior pleopoda with the rami ovate, serrated, armed with setæ on the serrations and at the extremity. Length ½ in.

Hab. Clark Island, Port Jackson.

Mœra viridis, *sp. nov.* (Pl. XXI., fig. 2.)

Eyes round. Superior antennæ as long as the cephalon and the first five segments of the pereion; second joint of the peduncle slightly longer and narrower than the first, third short; flagellum rather longer than the last two segments of the peduncle; appendage half as long as the flagellum, of five elongated articuli. Inferior antennæ inserted rather behind the superior pair, their peduncle subequal with the peduncle of the latter, the flagellum not longer than the last segment of the peduncle. Squamiform plates of the maxillipedes bordered with curved spines. Anterior gnathopoda small; propodos ovate, palm oblique, not defined. Posterior gnathopoda very large; carpus irregularly triangular, closely applied to the propodos which is very large (as long as the cephalon and first three segments of the pereion) oblong, rather broader distally than proximally, the palm transverse, armed with three large compressed teeth; dactylos armed internally with two teeth. Three anterior pairs of pereiopoda subequal in length; two posterior pairs longer; basa of the three last pairs more than half as broad as long, minutely serrated; mera broad, strongly convex behind; meros, carpus, and propodos serrated and hairy on the borders. Posterior pleopoda biramous, the rami unequal, phylloid, the larger with three small notches on its outer border, smooth on its inner; the smaller with both borders smooth, truncate and armed with a few straight hairs. Telson with the segments compressed, terminating each in two teeth, of which the inner is the more prominent, and armed with several straight spines. Colour light green. Length ¼ in.

The *female* has the palm of the posterior gnathopoda straight, and the meros of the two last pairs of pereiopoda narrower than the male.

The discovery of several specimens with the posterior pleopoda complete has shewn that this species ought to be placed in the present genus.

Genus MEGAMŒRA, Spence Bate.

Megamœra sub-carinata, *sp. nov.* (Pl. XXI., fig. 4.)

Fourth segment of the pleon dorsally carinate, the carina projecting posteriorly in the form of a compressed tooth. Superior antennæ nearly as long as the cephalon and perion; first two segments of the peduncle subequal, the first rather stouter; third very short; appendage minute; flagellum longer than the peduncle Peduncle of inferior antennæ rather shorter than that of superior pair; flagellum shorter than the last two segments of the peduncle. Anterior gnathopoda stout, propodos small; palm oblique, undefined. Posterior gnathopoda large (in the male); meros and carpus short, propodos ovate, narrower distally than proximally, dorsal border nearly straight, ventral strongly convex, bordered with hairs, palm defined by an obscure protuberance. Posterior pleopoda with broad ovate rami, serrated externally, smooth internally, emarginate, tipped with a few setæ. Telson with the segments compressed conical, emarginate, the extremity armed with two acute teeth and a few bristles. Colour nearly white, covered with minute brown dots, with two or three brown bands on the antennæ. Length 3/10ths in.

Hab. Port Jackson, (very common at low-water among algæ, etc), Botany Bay; Port Stephens, (Macleay Museum).

Megamœra suensis, *sp. nov.* (Pl. XXI., fig. 5.)

This species resembles the preceding in the form of the antennæ, the posterior pleopoda and telson and in the presence of a similar pair of teeth on the fourth segment of the pleon, but differs from it—besides other minor points—(1) in the possession of short mesial teeth on the posterior border of the last segment of the pereion and first two segments of the pleon; (2) in the direction of the palm of the posterior gnathopoda, which is almost transverse. Length 3/10ths in.

Hab. Sue Island, Torres Straits (Chevert Exped.).

Megamœra Bœckii, *sp. nov.* (Pl. XXI., fig. 6.)

Eyes oblong. Superior antennæ nearly as long as the cephalon and pereion; first two segments of the peduncle nearly equal in length, third small; flagellum longer than the peduncle; appendage composed of four elongated articuli. Inferior antennæ scarcely two-thirds of the length of the superior pair; the flagellum a little longer than the last segment of the peduncle. Anterior gnathopoda with the propodos ovate, palm undefined, hairy. Posterior gnathopoda having the carpus subtriangular; the propodos ovate, twice as long as broad, twice as long as that of

Wyvillea longimanus, *sp. unic.* (Pl. XXII., fig. 7.)

Eyes round. Superior antennæ rather longer than the cephalon and first three segments of the pereion; first segment of the peduncle short, thick; second twice as long; third rather smaller than the second; flagellum rather longer than the last segment of the peduncle, of seven articuli; appendage nearly one-fourth of the length of the flagellum. Inferior antennæ stout, subpediform with the peduncle equal in length to the superior pair; flagellum equal in length to the last segment of the peduncle, armed with hairs which are slightly hooked at the points. Anterior gnathopoda small; propodos ovoid, narrowed distally; palm nearly longitudinal. Posterior gnathopoda very large; carpus short, subquadrate; propodos elongated, four times as long as broad, curved forwards, a blunt tooth at the proximal and another at the distal end of the concave posterior border; dactylos as long as the propodos. Pereiopoda all short, broad, bordered with setæ, the two anterior pairs equal, shorter than the rest. Posterior pleopoda with the outer ramus broad, lanceolate, armed on the borders with a few setæ, and terminating in two short, strong setæ. Telson conical, blunt. Length about ¼ in.

Hab. Port Jackson.

FAM. COROPHIIDÆ.

SUB-FAM. PODOCERIDES.

Genus AMPHITHOË, Leach.

Amphithoë quadrimanus, *sp. nov.* (Pl. XXI., fig. 7.)

Eyes small, round. Superior antennæ as long as the cephalon and pereion; flagellum thrice as long as the peduncle. Inferior antennæ twice as long as the peduncle of the superior pair; third segment very stout, produced below at the distal end into a rounded protuberance, clothed in common with the lower margins of the fourth and fifth segments, with long plumose hairs;

flagellum as long as the peduncle. Propodos of anterior gnathopoda sub-quadrate, a little broader distally than proximally, palm nearly transverse, not defined. Posterior gnathopoda with the meros and carpus both produced into a small tooth at their inferior and distal angle; propodos large, sub-quadrate, twice as long as broad, palm nearly transverse, concave. Posterior pleopoda reaching beyond the extremity of the preceding pair, the outer ramus armed with three hooks, the inner foliaceous, armed with slender straight spines. Telson armed with about half-a-dozen slender spines. Length ¼ in.

Hab. Clark Island, Port Jackson.

Genus Podocerus, Leach.

Podocerus australis, *sp. nov.* (Pl. XXI., fig. 8.)

Genus MICRODEUTEROPUS, Costa.

Microdeuteropus Mortoni, *sp. nov.* (Pl. XXII., fig. 2.)

Anterior gnathopoda large; meros produced at its inferior and distal angle into a long sharp spine which reaches beyond the distal extremity of the carpus; carpus larger than the propodos, oblong, more than twice as long as broad, the upper border convex, the lower straight; propodos nearly as broad as the carpus at the base, but narrowing slightly distally; dactylos two-thirds of the length of the propodos, minutely dentate on its inner border. Last pair of pereiopoda longer than the others. Posterior pleopoda short, the rami tipped with setæ which are longer and more slender than those on the preceding pairs. Telson conical, tipped with about half-a-dozen setæ similar to those on the posterior pleopoda. Length 3/10ths in.

Hab. Clark Island, Port Jackson.

I have named this species after Mr. Alex. Morton, a very intelligent and willing collector, to whose assistance I have frequently been indebted.

Microdeuteropus tenuipes, *sp. nov.* (Pl. XXII., fig. 1.)

Eyes round. Superior antennæ as long as the cephalon and first six segments of the pereion; first segment of the peduncle scarcely as long as the cephalon, second half as long again, and much more slender; third about one-fifth of the length of the second; flagellum longer than the peduncle, of about eighteen elongated articuli, each tipped distally above and below with a few short hairs. Inferior antennæ about four-fifths of the length of the superior pair, sub-pediform, the peduncle ornamented below with fasciculi of longish slender hairs; flagellum shorter than the last segment, ornamented with a few slender hairs on each articulus, and with a few stouter hooked hairs at the apex. Anterior gnathopoda with the carpus and propodos nearly equal in length, the former sub-triangular, the latter ovate; palm nearly longitudinal, scarcely defined. Posterior gnathopoda similar in shape to the anterior pair, but smaller, and with the palm directed a little more transversely. Two anterior pairs of pereiopoda short, stout; third pair shorter than the fourth; fifth much longer than the fourth, slender. Fourth and fifth pairs of pleopoda with stout, straight spines; sixth pair with two or three spines like those of the preceding pairs, and with two or three longer and more slender spines or hairs, which are slightly curved at the apex. Telson thick, truncate, armed above with two or three slender spines. Length ¼ in.

Hab. Clark Island, Port Jackson.

Microdeuteropus chelifer, *sp. nov.* (Pl. XXII., fig. 3.)

Eyes small, round. Superior antennæ nearly as long as the cephalon and the first six segments of the pereion; flagellum rami short, sub-foliaceous, armed with slender hairs. Telson conical, armed above with a few slender hairs. Length 1/5th in.

Hab. Clark Island, Port Jackson.

While *M. australis*, mihi, resembles the European species *M. Websteri*, and *M. tenuipes* nearly approaches *M. anomalus*, the present species finds its nearest ally in the commonest English species—*M. gryllotalpa*.

SUB-FAMILY COROPHIIDES.

Genus COLOMASTIX, Grube.

Colomastix Brazieri, *sp. nov.* (Pl. XXII., fig. 4.)

Eyes round, rather prominent. Superior antennæ as long as the cephalon and first three segments of the pereion, sub-pediform, extremely stout; peduncle slightly compressed from above downwards, trigonal; first segment broader but shorter than the second; third half as long as the second; flagellum rudimentary, of four small articuli. Inferior antennæ with the peduncle as stout as that of the superior pair, slightly compressed; flagellum of one articulus, armed with a few simple, straight hairs. Epistome and labrum very prominent. Anterior gnathopoda simple, filiform exunguiculate, folded under the pereion, all the joints (except the coxa) sub-cylindrical, slender. Posterior gnathopoda large, carpus produced inferiorly, propodos ovate, palm oblique, toothed. Two anterior pairs of pereipoda stout; three posterior pairs subequal, smaller than the first two. Sixth pair of pleopoda with the outer ramus short, the inner twice as long, lanceolate, acute. Telson conical, compressed. Colour light green. Length about 2/5ths in.

The female differs from the male in the smaller size of the posterior gnathopoda, which have an undefined hairy palm, and a very small dactylos.

Hab. Port Jackson, 2—10 fathoms.

I have named this species after Mr. John Brazier, C.M.Z.S., from whom I obtained my first specimen.

Genus CYRTOPHIUM, Dana.

Cyrtophium dentatum, *sp. nov.* (Pl. XXII., fig. 5.)

Male.—Two last segments of the pereion, and two first of the pleon projecting in the form of a tooth in the middle dorsal line. Superior antennæ as long as the cephalon and pereion; first segment of the peduncle short, second and third twice as long, subequal, fringed below with long slender hairs; a short, bi-articulate appendage; flagellum rather shorter than the last segment of the peduncle, sex-articulate. Inferior antennæ rather longer than the body; first segment of the peduncle short, stout; second twice as long; third the longest; fourth not half the length of the third and slender; flagellum scarcely as long as the last segment of the peduncle, sex-articulate. Anterior gnathopoda

Cyrtophium minutum, *sp. nov.* (Pl. XXII., fig. 6.)

Anterior segments of the pleon slightly produced in the middle dorsal line. Eyes very prominent.. Superior antennæ as long as the cephalon and the first six segments of the pereion; flagellum subequal with the last segment of the peduncle, of three articuli, of which the first is much longer than the other two ; no appendage. Inferior antennæ equal in length to the superior pair ; flagellum scarcely half as long as the last segment of the peduncle, obscurely multiarticulate. Anterior gnathopoda very small, fringed with long hairs; propodos long-ovate; palm undefined; dactylos nearly as long as the propodos. Posterior gnathopoda very large, basos stout; meros produced below into an angular protuberance; carpus sub-quadrate; propodos ovate, dilated, dorsal border strongly convex, palm defined by a prominent acute tooth, and occupied distally by a rounded eminence; ventral borders of the meros and propodos ornamented with a close fringe of long plumose hairs. Fourth pair of pleopoda with the outer ramus much shorter and narrower than the inner; both tipped with a few short bristles. Fifth pair with the outer ramus styliform, armed with one or two hairs at the apex, the inner foliaceous, long-ovate, bordered internally with a few hairs. Nearly colourless, with minute brown spots and a transverse brown band on the cephalon at the base of the superior antennæ. Length 1/10th in.

Hab. Port Jackson.

Genus ICILIUS, Dana.

Icilius punctatus, *sp. nov.* (Pl. XXIII., fig. 1.)

Distinguished from *I. australis* chiefly by the greater breadth of the rami of the three posterior pairs of pleopoda.

The eyes in this genus are truly compound. The mandibles have their apex double—each half being armed with about six teeth; between the apex and the grinding tubercle is a row of about half-a-dozen stout, non-ciliated spines; the grinding tubercle is prominent and fringed with numerous cilia. The inner lamella of the first pair of maxillæ is short and narrow, ciliated internally and armed distally with but three slender ciliated spines which nearly equal the whole lamella in length: the middle lamella is longer than the inner, its distal border is straight and armed with about a dozen stoutish spines, which are bifurcate near the extremity—one branch being very short, while the other is longer and slightly incurved; the inner border is ciliated; the external lamella is the most prominent, its distal extremity is rounded, and is armed with short, stout, simple spines with a few of more slender form extending also down about half of the outer and less than one-third of the inner border—those on the latter aspect being rather stouter than the rest. The second pair of maxillæ have both lamellæ expanded, ovate in outline, the inner rather shorter than the outer, armed at its extremity and in about half of its inner surface with a series of series of very long, slender, non-ciliated hairs. The propodos is of a clavate form, and furnished at the extremity with a dense fasciculus of hairs similar to those on the carpus; almost concealed amongst these is the slender, pointed dactylos, which equals the propodos in length. The two first pairs of pereiopoda are large and prehensile in the male, the propodos being short and broad, with a deeply excavated, spine-armed palm, and the dactylos stout and long. The mode of locomotion when the animal is removed from the water resembles that of the terrestrial Isopoda.

The present species lives in colonies on the surface of calcareous sponges (particularly *Veluspa polymorpha)*, growing in a fathom or two of water in Port Jackson. The surface of the body and limbs is covered with numerous minute red or grey spots.

Genus incertæ sedis.

Genus POLYCHERIA. *(novum.)*

Pereion broad; pleon compressed, more or less carinate. Antennæ sub-equal; superior pair without an appendage. Mandibles exappendiculate. Maxillipedes with well-developed squamiform process. Gnathopoda small, sub-chelate. Pereiopoda all prehensile, with narrow basa. Posterior pleopoda biramous with equal rami. Telson double.

Polycheria tenuipes, *sp. nov.* (Pl. XXII., fig. 8.)

Eyes very large, red. Superior antennæ as long as the cephalon, and first six segments of the pereion; first joint of the peduncle short and stout; second longer and narrower than the first; third inconspicuous; flagellum rather longer than the peduncle, of fourteen articuli. Inferior antennæ rather longer than the superior; first joint of the peduncle short and stout; second and third longer, slender, subequal; flagellum about equal in length to the peduncle, of seven elongated articuli, each with a circlet of a few delicate hairs. Anterior gnathopoda with the propodos oval; the palm nearly transverse, not defined. Posterior gnathopoda longer and more slender than the anterior pair; carpus and propodos nearly equal in length, the latter narrower than the former, with the palm transverse, the dactylos short. Pereiopoda subequal, slender, all prehensile; basos narrow; propodos oblong, palm transverse, waved; dactylos short. Three posterior pleopoda biramous, the rami unarmed, last pair with the rami broad-lanceolate, with one or two hairs on the borders. Segments of the telson broad-lanceolate, acute. Length 3/20ths inch.

Hab. Port Jackson, two fathoms.

Polycheria brevicornis, *sp. nov.*

Eyes rather small, round. Superior antennæ as long as the cephalon and first three segments of the pereion; first segment of the peduncle short and stout, second narrower than the first and about twice as long; third about one-fourth of the length of the second; flagellum equal in length to the second slender, acute spine, and at the posterior end with a second spine of similar form, but shorter; second segment with a pair of short spines a little behind the middle of its dorsal surface; the rest of the segments unarmed. Eyes oval, red. Superior antennæ more than twice the length of the cephalon; flagellum nearly as long as the peduncle. Inferior antennæ nearly as long as the peduncle of the superior pair. Anterior gnathopoda small, about two-thirds of the length of the cephalon. Posterior gnathopoda very large, more than four times as long as the anterior pair; basos long, slender, armed with a compressed tooth at the distal end of its anterior border; carpus small; propodos very large, of irregular form, constricted at the proximal end, broader distally, armed on the dorsal border with three very large, compressed teeth, near the middle, and a small blunt tooth at the distal end; palm defined by a short acute tooth, and armed about its middle with a sharp spine which is separated by a deep sinus from a broad, compressed process occupying the distal third of the palmar border. First pair of pereiopoda more slender than the two posterior pairs; with the dactylos smaller; dactyla of the posterior pairs nearly as long as the propodos, palm defined by a small tooth. Length ½ in.

Hab. Clark Island, Port Jackson.

Caprella cornigera, *sp. nov.* (Pl. XXIII., fig. 5.)

Neck very long; the other segments increasing in length to the fourth; fifth rather shorter than the fourth; second, third, and fourth segments each with a pair of cornua on the middle of its dorsal border, and a short conical tooth at its posterior extremity. Eyes small, round. Superior antennæ half as long as the cephalon and pereion; flagellum as long as the last segment of the peduncle, of seven articuli of which the first is very long. Inferior antennæ very small, little longer than the first segment of the peduncle of the superior pair; flagellum as long as the last segment of the peduncle, of four articuli. Anterior gnathopoda small, propodos ovate, narrowing distally; palm nearly longitudinal, undefined. Posterior gnathopoda very large; basos longer than the cephalon; carpus small, sub-triangular; propodos nearly as long as the basos, narrow, palm nearly longitudinal, defined by a broad, low, triangular process, and armed near the distal end with a sharp tooth. Pereiopoda short and broad, with a well-defined, bristle-armed palm. Colour grey. Length ½ in.

Hab. Clark Island, Port Jackson.

Caprella inermis, *sp. nov.* (Pl. XXIII., fig. 3.)

Cephalon terminating anteriorly in a minute mesial tooth. Neck very long; first segment of the body longer than the head and neck, the rest shorter. Superior antennæ as long as the cephalon and first segment of the pereion; flagellum shorter than the last two segments of the peduncle. Inferior antennæ a little longer than the peduncle of the superior pair; flagellum shorter than the two last segments of the peduncle. Anterior gnathopoda palm longitudinal, defined by a conical tooth and armed with two others—of which the proximal is the smaller—towards the distal end. Branchiæ clavate. Pereiopoda subequal, short and stout, with a distinct palm. Colour red. Length ½ inch.

Hab. Clark Island, Port Jackson.

EXPLANATION OF PLATES XVIII.—XXIV.

In all the figures *a.*—superior antennæ; *b.*—inferior antennæ; *c.*—mandibles; *e.*—maxillipedes; *f.*—anterior gnathopoda; *g.*—posterior gnathopoda; *h.*—first pair of pereiopoda; *i.*, *k.*, *l.*, *m.*—second, third, fourth, and fifth pairs of pereiopoda respectively; *p.*—sixth pair of pleopoda; *x.*—telson.

Plate XVIII.

Fig. 1.—Cyproidia ornata.
,, 2.—Cyproidia lineata.
,, 3.—Lysianassa australiensis.
,, 4.—Atylus monoculoides.

Plate XIX.

,, 1.—Œdicerus latrans, details.
,, 2.—Urothoë pinguis.
,, 3.—Harmonia crassipes.

Plate XX.

,, 1.—Atylus lippus.
,, 2.—Leucothoë novæ-hollandiæ; *g.*—right, *g'.*—left posterior gnathopod.
,, 3.—Eusirus dubius.
,, 4.—Mœra dentifera.

Plate XXI.

,, 1.—Mœra hamigera; *g.*—right, *g'.*—left, posterior gnathopod.
,, 2.—Mœra viridis.
,, 3.—Mœra approximans, details.
,, 4.—Megamœra sub-carinata.
,, 5.—Megamœra suensis.

Fig. 6.—Megamœra Bœckii.
,, 7.—Amphithoë quadrimanus.
,, 8.—Podocerus australis.

Plate XXII.

,, 1.—Microdeuteropus tenuipes.
,, 2.—Microdeuteropus Mortoni.
,, 3.—Microdeuteropus chelifer.
,, 4.—Colomastix Brazieri.
,, 5.—Cyrtophium dentatum.
,, 6.—Cyrtophium minutum.
,, 7.—Wyvillea longimanus.
,, 8.—Polycheria tenuipes.

Plate XXIII.

,, 1.—Icilius punctatus, details.
,, 2.—Caprella echinata.
,, 3.—Caprella inermis.

Idmonea radians, *Busk, Catalogue of the Cyclostomatous Polyzoa in the Collection of the British Museum*, p. 11, pl. vii., figs. 1—4.

"Zoarium usually procumbent, stipitate, sometimes suberect; branches dichotomous, radiating more or less regularly in a circular form from the centre, very angular in front; dorsal surface perforated; cells 1—4 in each series, the innermost the longest, aperture (when quite perfect) bilabiate." (Busk.)

This species is extremely common on the shore near Sydney, both in Port Jackson and on the outer coast.

2. Idmonea milneana, D'Orbigny.

Idmonea milneana, *D'Orbigny, Voy. Amér. Mérid., Polypiers, p.* 20, *pl.* ix., *figs.* 17—21; *Busk, l.c., p.* 12, *pl.* xi.

"Zoarium spreading, ramose, dichotomous, each longer branch usually terminating in a pair of short forks; tubes very slightly exserted, flattened and even; aperture wide, margin thick; four cells in each series. Surface finely dotted, slightly sulcate behind; dorsal surface convex, usually marked with concentric lines of growth." (Busk.)

I have some hesitation about placing under this heading a species of Idmonea very commonly dredged in Port Jackson. It seems to approach very near the above named species in general form and habit of growth; but the oral margins of the cells in place of being thick as described by Busk in D'Orbigny's species, are extremely thin and delicate. The "dots" on the surface consist not of impressed dots but of close set minute granules, which are seen under a higher power to be of compressed ovate form, each marked by a mesial longitudinal groove. The colour is light purple.

3. Idmonea Pedleyi, *sp. nov.*

This species which seems to be undescribed, is a near ally of the preceding. The branches are more slender, and the terminal branchlets less expanded; the cells are usually three in a transverse row, they are prominent, usually less than half immersed; their wall is closely ringed, and the peristome is very thin. The whole ventral surface is sparsely ornamented with dots which a higher power resolves into minute spinules; the dorsal surface is smooth. Colour greenish.

Hab. Port Jackson.

I have named this species after my friend Mr. Perceval Pedley, who first called my attention to it.

Genus Pustulopora, Blainville.

4. Pustulopora proboscidea, E. Forbes.

Pustulopora proboscidea, *Johnston, Brit. Zoopl., 2nd ed., p.* 278, *pl.* 48, figs. 4—6; *Bush, l.c., p.* 21, *pl.* xvii., A. right figure.

"Zoarium slender, branched alternately, cells slightly

6. Pustulopora parasitica, Busk.

Pustulopora parasitica, *Busk, l. c., p.* 21, *pl.* xvii., figs. 1—2.

"Zoarium about a quarter inch high, usually formed of 1—3 branches, short and truncate; cells usually deeply immersed and very slightly prominent, except in very young specimens. Colour brown with white spots."

Port Jackson, parasitic on *Catenicella ventricosa.*

Genus TUBULIPORA, Lamarck.

7. Tubulipora flabellaris, Johnston.

Tubulipora flabellaris, *Johnston, Brit. Zooph., p.* 274, *pl.* 46, *figs.* 5, 6; *Busk, l. c., p.* 26, *pl.* xxiv., xxv.

"Zoarium adnate, fan-shaped, often recurved on the sides; cells decumbent, cells irregularly disposed, or obscurely serial."

Common on Laminaria in Port Jackson; semingly identical with the British and Scandinavian species above named.

Genus DISCOPORELLA, Gray.

Discoporellæ are very numerous in Port Jackson; a small-leaved species of fucus growing on Clark Island and in other situations is generally so closely covered with these polyzoa, together with a species of *Lepralia,* that the stem is entirely concealed. After a comparison of a considerable number of specimens found on this fucus and in other situations, I am inclined to regard them as consisting of at least five species which I have determined as follows:—

8. Discoporella novæ-zelandiæ, Busk.

Discoporella novæ-zelandiæ, *Busk, l. c., p.* 32, *pl.* 30, *fig.* 2.

"Discoid, cupped; cells tubular, projecting, connate in uniserial radii; peristome bifid; central area (unoccupied by cells) depressed; cancelli large, becoming smaller towards the periphery." (Busk.)

Port Jackson on Fucus; Botany Bay.

9. Discoporella ciliata, Busk.

Discoporella ciliata, *Busk, l. c., p.* 31, *pl.* 30, *fig.* 6.

"Discoid; cells uniserial, 4—6 in each row; diameter of mouth less than that of interstitial cancelli; peristome much produced on one side, nearly vertical, divided into several (2—4) long acute slender spines."

Common in Port Jackson on Fucus.

10. Discoporella porosa, *sp. nov.*

Zoarium orbicular, a little depressed in the centre. Cells disposed very regularly in biserial or triserial rows, becoming diameter of the cell in length. Central area and intermediate spaces occupied by numerous polygonal cancelli, bounded by slender trabeculæ, from the point of anastomosis of which frequently arises a short perpendicular spinule; cancelli smaller than the mouths of the cells, and occupied in turn by a series of very minute secondary cancelli.

Hab. On Fucus, Clark Island, Port Jackson.

12. Discoporella tridentata, *sp. nov.*

Zoarium strongly convex, of circular outline; margin thin, marked with radiating ridges; cells free, distant, in radiating rows; peristome produced into three points, two (smaller) internal, and one external. Whole surface divided into angular areæ by smooth, semicylindrical, anastomosing trabeculæ, the areæ punctate.

Common on Fucoids, Port Jackson.

Genus CRISIA, Lamx.

13. Crisia punctifera, *sp. nov.*

Cells 9—14 in each internode, elongate, often projecting considerably, with numerous punctations; mouth circular, or elliptical, usually with a small tooth-like thickening behind. Branches arising from the third or fourth cell, usually the third; joints black. Radical tubes 4—5 jointed, punctated, arising from the third or fourth cell, usually the third. Growing in close tufts.

Hab. Manly Beach, Port Jackson, etc.

Allied to *C. denticulata*, but of thicker habit and much more numerous punctations.

14. Crisia incurva, *sp. nov.*

Cells 6—11 in each internode, cylindrical, curved forwards, annulated, with tolerably numerous small punctations; branches arising usually from the first to the fourth cell of the internode. Joints light brown.

Hab. Port Jackson.

Perhaps scarcely distinct from *C. tubulosa*, Busk.

EXHIBITS.

J. Brazier Esq., C.M.Z.S., exhibited a specimen of Fossil *Bulimus senilis*, (sinistral var.) from Isle of Pines, also a new *Cardium* from New Caledonia, and a *Cypræa Bregariana*, dredged at Isle of Pines by Lieut. Heurtel, French Navy.

◆

the Transactions of the New Zealand Institute, Vol. XI., p. 339, under the name of *Phalacrocorax magellanicus*, Gml. I find however, that they differ from *P. magellanicus* in not having the white spot under the ear, and in the bare skin in front of the eyes being blue with crimson dots, instead of red. From *P. purpurascens* Brandt, and from *P. sarmientonus*, King, the Campbell Island bird differs in having a narrow white alar band, and in the feet being flesh color, instead of brownish-yellow. I find it comes nearest to *P. nycthemerus*, if not identical with that species.

PHALACROCORAX NYCTHEMERUS, *Cab.*

Head, neck, back, rump, thighs and upper tail-coverts blue-black; shoulders, scapulars, and wing-coverts green-black, except a very narrow bar of white, formed by some of the upper wing-coverts; chin, throat, and whole under surface of body (except the neck) white; wings and tail brownish black. Head crested, a few linear white feathers above the eye and on the upper part of the neck. Irides brown. Skin in front of eye dark blue, the minute papillæ crimson, sparingly clothed with small feathers. Bill dark brown passing into orange at the base of both mandibles; gular skin bright orange. Legs and feet flesh-color, with the soles and the joints on the upper surface black; webs flesh-color, shading into black towards the margin. A narrow strip of white feathers runs along the centre of the chin pouch.

Immature.—The whole of the upper surface, neck, wings, and tail dark brown, in places glossed with greenish, no white alar bar; chin, throat, and belly white. Skin before the eye, dull orange with crimson spots; bill brown passing into orange at the base of the mandibles, gular pouch orange. Feet as in the adult, but not so pink.

Length 28 inches; extent 39; wing 10·5; tail 6; culmen 2·2; bill to gape 3·1, depth at nostrils ·52, breadth ·43; tarsus 2·4; outer toe (without claw) 3·8; middle toe 2·85; inner toe 1·85; hind toe 1·25.

The following is an analysis of the species of Cormorants belonging to the sub-genus *Leucocarbo:*

Neck black in front.
  A white alar fascia.
    A white ear spot—*P. magellanicus*, Gml., Magellan Straits.
    No white ear spot—*P. nycthemerus*, *Cab.*, Campbell Island.
  No alar fascia—*P. bougainvillii*, Less., Peru.
Neck white in front.
  A white alar fascia.
    Gular pouch naked—*P. carunculatus*, Gml., Falkland Isds.
    Gular pouch with a median feathered line—*P. cirrbatus*, Gml., New Zealand and Chatham Islands.
  No alar fascia—*P. verrucosus*, Cab., Kerguelen Land.

On some Fossils from Levuka, Viti.

distinct from any described form living or fossil, but resembling some of the spinous species of the China Seas. 3. A cast or the internal septa, with a small portion of the wall of a doubtful coral not unlike one of the genus *Conosmilia*, of Duncan. This Coral may eventually be determined, but it is of so extremely friable a structure that its details can not easily be worked out. 4. A *Conus*, not like any known to me as part of the Pacific fauna. 5. An *Oliva*, like some of the common tropical forms. 6. A *Natica*, very like *N. Wintlei* nobis of the Victorian and Tasmanian Miocene. 7. Two species of *Turritella*, very near to *T. Sturtii*, of the Tasmanian Miocene. 8. A *Trophon* of decidedy Australian affinities. 9. A cast of a *Turbonilla*. 10. Two valves of a *Corbula*, both broken, not unlike *C. scaphoides*, Hinds.

The matrix in which all these shells are embedded is a brown slightly ferruginous sandy clay. The fossils are quite white and much decomposed, so that they become pulverulent on the slightest touch. This does not arise from weathering, as the state is the same even when the clay is freshly broken.

The above list shows a tertiary and, as far as we can judge from the *Fungia* and *Oliva*, a tropical fauna. Any tertiary marine rocks from the Pacific are of high interest because of their bearing upon the coral reef theory. It has already been remarked by Dana and others that in some portions of the Fijee group many marks of upheaval are to be seen, but these were supposed to refer to a very modern physical change. These fossils must claim a much more ancient origin. By many it is supposed that the reef islands in the Pacific mark the site of some former continent. But if we find in the centre of those islands tertiary marine remains, the ancient continent theory will be difficult to maintain. I await further information. and as I hope fresh supplies of fossils, to give full details.

ON SOME POST TERTIARY FOSSILS FROM NEW CALEDONIA.

BY THE REV. J. E. TENISON-WOODS, F.G.S., F.L.S., &c.

I have received lately from Mons. Savés of Noumea, a small box of fossils, which are of uncommon interest. They comprise bones and land-shells, and the following is a translation of his letter concerning them:—"I found the accompanying fossils at La pointe d' Artillerie, near Noumea, during the month of February. There was a whole bed of these bones in extraordinary quantities. The bed is in certain places from 10 to 15 centimetres thick, and spread over an extent of about 20 metres. In one very sheltered place which was perfectly vaulted over by enormous rocks, these bones were completely uncovered and the small skulls of many of the animals quite entire. How have they accumulated in this way? They could not have been brought by birds of prey or they would not be so well preserved and entire. Land-shells, especially *Helix Lifouava* and *Cyclostoma Artense*, very nearly, if not entirely identical with the common domestic rat. The other bones are entirely those of birds, several species being represented and some of rather large size. There are a few tarso-metatarsal bones of perching birds, and some of a raptorial kind about the size of a kite. From this I should conclude that the cave has been filled with bones brought by birds of prey, though it seems rather strange to find them in such quantities and spread over such a wide surface. It is well known that rats are very favorite food with hawks &c., and I remember finding a large quantity of rats' bones close by a nest of one of our common swamp hawks. This was at Musquito Plains, where a small and probably undescribed rat forms burrows in great numbers close by the sandhills, which abound in several localities.

Upon showing these fossils, if they may be called so, to Mr. J. Brazier, he mentioned that he had found a similar deposit at an island off New Caledonia with a large number of the remarkable land-shells, *Bulimus senilis*, Gass. The history of this species is worth recording here. It was sent home in 1868 to Mons. P. Guestier by one of Marist missionaries, the Rev. Père Lambert. It is a large, imperforate, heavy, thick, oval shell, of a chalky white color, as it is always found dead and without any trace of epidermis, having been exposed to the action of air or water or buried. Suture compressed, a little jagged; spire elongate, conical, apex acute. Whorls from 6 to 7½, convex, the last about three quarters of the whole length. Aperture elongate, narrow, auricular, angular above, very much reflected below, columella solid, furnished with a thick plait, rounded, ascending, parietal fold dentiform, conical descending, peristome very thick, joined to the columellar callosity, labrum sinuous, broadly notched towards the summit, lines of growth very distinct, forming a stout varix, especially anteriorly, where it is in some specimens 25 millim. wide. Sometimes the specimens show traces of color, but I have never seen any, and the specimens shown me by Mr.

Brazier were smaller than those figured by Mons. Gassies, (*Faune Conchyl. de la Nouvelle Caledon.* 2. part, p. 66, 113 pl. 2, fig. 15). The original description was in the *Jour. de Conchy.*, 1869, p. 71, and the habitat given Baie du Sud.

When Mons. Gassies first saw these shells with the same constant character, that is to say their dead appearance, he justly concluded that the species or variety must be extinct. In answer to enquiries addressed to the Rev. Father Lambert, the following facts were furnished: To the south-east of the Isle of Pines there is an islet called by the natives Koutoumo. The first specimens of *Bulimus senilis* were collected there in large quantities. The islet is of a marine formation. Its base is a white sonorous (flinty ?) calcareous stone, over this lies a sandy vegetable loam supporting a vigorous growth of pines, with which the whole island is covered as well as with some other large trees. It is in this loam, between the surface and the calcareous rock, that the forms the base of the islands. It is somewhat remarkable that we meet on every side evidence of upheaval in the Pacific, where the general impression is that subsidence is taking place. The coral reef or subsidence theory of Darwin seem to have been too universally applied, and if it be the true explanation of the atoll, barrier reefs, &c., the causes at work may be much more limited and local than we are now inclined to think.

H

ON THE CLUPEIDÆ OF AUSTRALIA.

By WILLIAM MACLEAY, F.L.S., &c.

Herrings are so very rarely seen in the Sydney Fish Market, that it is generally believed that the Australian Seas are barren of this valuable group of Fishes, which form as we know a large source of wealth in other countries.

It will scarcely be credited by many, that the very reverse is the case. There is no sea on the Globe, I believe, favoured with a more rich or varied supply of Fishes of the Herring tribe, than that which washes our shores.

That they are seldom seen is due to the facts, that the shoals do not as a rule enter the harbours on the coast, and that to fish for them in the open sea would require appliances not at present in the possession of our fishermen.

Our species, as might be expected, are different from those of the Northern Hemisphere, but in excellence as edibles certainly not inferior.

In giving, as I propose to do in this paper, a succinct account of all the species of *Clupeidæ* known at present to inhabit Australian waters, with all that I have been able to ascertain of their habits, haunts, and uses, I think it is desirable that I should facilitate as much as possible the difficulties in the way of local observers, arising from their not having ready access to some of the authorities referred to for the descriptions of the genera and species. I have, therefore, in addition to giving a short synopsis of the generic characters, quoted in full the description of each species, with the name of the authority, excepting in instances where the descriptions or information have been previously published in the Proceedings of our own Society.

The *Clupeidæ* may be briefly characterised as—Physostomous scaly Fishes, with naked head and no barbels, abdomen more or less compressed or serrated, no adipose fin, dorsal fin short, anal sometimes long, dentition feeble.

SYNOPSIS OF THE AUSTRALIAN GENERA.

ENGRAULIS.—Body compressed, mouth very wide, lateral; upper jaw projecting. Species—*Engraulis Antarcticus*, *E. nasutus*.

CHATOËSSUS.—Mouth transverse, inferior, narrow, without teeth

MEGALOPS.—Upper jaw shorter than lower, abdomen rounded, an osseous gular plate, scales large. Species—*Megalops cyprinoides*.

CHANOS.—Mouth small, toothless, abdomen flat, gill membranes entirely united, scales small. Species—*Chanos salmoneus*.

I shall now proceed to give a detailed account of each species in the order in which I have placed them in the above synopsis.

1. ENGRAULIS ANTARCTICUS, Casteln.

Proc. Zool. and Acclim. Soc. Victoria, Vol. 1, p. 186.

There is little doubt, I think, that this is identical with the Fish mentioned by Gunther, Cat. Vol. 7, p. 386, as coming from Tasmania, and which he makes out to be merely a variety of *Engraulis encrasicholus*, the well known anchovy of Europe. Dr. Gunther gives his variety a name *(antipodum)*, which looks very much like a belief in its specific character. Count Castlenau gives the following description of this Fish in the volume cited:—"The height of body seven and one-quarter times in the total length; head, four and one-quarter in the same; eye, three and one-fifth in length of head; the muzzle considerably longer than the mandibula and embracing it, the upper jaw presents a line of very minute and equal teeth, and the lower one has a similar line of still smaller ones. The dorsal fin is placed at an equal distance from the snout and the base of the caudal; it is as high as the body, and of fifteen rays—the first much shorter than the others, and the second and fifth rather longer than the following; caudal fin strongly bifurcated, the lateral rays being about one-third longer than the height of the body; it is formed of twenty long rays, and five or six shorter ones on each side; anal fin rather lower than the dorsal, having twelve rays of which the first is short. From the posterior end of the anal the distance to the lateral root of the caudal is contained three times in the distance from its beginning to the end of the mandibula, and twice from the superior root of the caudal to the anterior one of the dorsal; the ventrals are rather smaller than the pectorals, are formed of only one simple ray, and five branched ones, and are placed a little in advance of the dorsal; the pectorals are formed of fifteen rays."

"The colour of the upper parts is of a light greyish green with purple tinges; the head is brown, the lower parts are very silvery; there is a narrow, yellow, longitudinal streak from the upper part of the operculum to the base of the caudal, and below this extends a broad, longitudinal, silvery, and very brilliant band, having sometimes a blue tinge; the operculum and throat are very iridescent; the fins are diaphanous; the tail is yellow at its base, and obscure towards the extremity; eye, silvery. After preservation in spirits the Fish appears very silvery, with the upper parts of a dark blue."

Count Castlenau also states that it is very common in the Melbourne market throughout the year, and that it is known to

Sardine, and the Anchovy in Europe, can be looked upon as large sources of national wealth, and if this habit does not belong to the Melbourne Anchovy, it is probable that its fishing may never become a matter of much importance. It is desirable, however, that the history of the Fish should be ascertained. I think it is not unlikely that the specimens seen so frequently in the Melbourne Market may be young Fish, (the name "white bait" seems to indicate so much,) and that the periodical haunts of the large shoals have never yet been noticed.

2. ENGRAULIS NASUTUS. Casteln.
Proc. Linn. Soc., N. S. Wales, Vol. III., p. 51.

This species is described by Count Castlenau (loc. cit.) from one adult specimen, 7 inches long, sent to him from the Norman River, Gulf of Carpentaria. Its special distinguishing character seems to be a strong longitudinal ridge along the top of the head.

There is another species of *Engraulis*, said to have been observed on the northern coast of Australia, but on insufficient evidence, which I may here make mention of. It is the *Engraulis Russellii*, *indicus*, and *balinensis*, of the late Dr. Bleeker; *indicus* being the name given by him in his last work—("Atlas Ichthyologique.") the *Engraulis Brownii*, *Gm.*, of Dr. Cantor, (Cat. of Malayan Fishes, page 303) and the *Engraulis Russellii* of Dr. Gunther's Catalogue of Fishes. Dr. Bleeker places the species in the genus *Stolephorus*, which he separates from *Engraulis* on some very slight grounds. The fish is very common throughout the seas of the East Indian Archipelago, and forms a very large and valuable article of production and trade. Dr. Cantor in his Catalogue of Malayan Fishes page 305, gives the following interesting information respecting it:—"In the Straits of Malacca as in the mouth of the Ganges, this species is astoundingly numerous at all seasons, two or three inches is the usual length, five to six are very rarely seen. In fine weather swarms may be seen swimming near the water's edge, and making very short leaps closely above the surface of the sea. As Russell observes, they are highly valued for their delicate flavour when fried. In Java, Sumatra, and the Straits of Malacca, large quantities are preserved both for home consunption and exportation to India and China. The delicious condiment is famed under the denomination of "*roode vischjes*" or "*Red Fish*" (*Ikan Mérah* of the Malays) and is used as a relish. The following mode of preparation, as practised at Bencoolen and Malacca, has been communicated by W. J. Lewis Esq., Ass. Res. Counsellor, Penang. "After the heads have been removed, the Fishes (those of middling size are preferred,) are cleansed, salted (in the proportion of one to eight parts of Fish), and deposited in flat glazed earthern vessels. In the latter they are for three days submitted to pressure by means of stones placed on thin boards or dried plantain leaves. The Fishes are next freed from salt, and saturated with vinegar of Cocoa-palm toddy, after which are added powdered ginger and black pepper (the latter mostly entire), and some brandy and powdered "Red Rice." After the head four-times and one fourth. The diameter of the eye is more than the length of the snout, and two-ninths of that of the head. Snout projecting beyond the cleft of the mouth, which is nearly transverse. Origin of the dorsal fin nearer to the end of the snout than to the root of the caudal fin, and behind the base of the ventrals. Coloration uniform."

This species was at first accepted by Count Castelnau as identical with the species so well known in the Murray, Murrumbidgee, and all the rivers rising to the westward of the dividing range of Eastern Australia. Subsequent observations however, satisfied him that the Fish of the rivers of the interior was specifically distinct, and he has accordingly given it the name of *C. Richardsoni*. The present species *C. Erebi*, he has seen from Western Australia, Dampier's Archipelago, the Norman and the Brisbane rivers, at the last of these places said to be known in the Market under the name of "*Sardine.*" It is said also to be found in the Clarence, Burnett, and Fitzroy, where it is known as the Bony Bream. Whether all these localities are correct, or whether some of them do not apply to the other species mentioned below, is a matter I believe open to doubt. It seems from all that I can gather of its habits to be a fresh-water Fish, though sometimes found in the sea. As an article of food it is said to be much relished in some places. Count Castelnau states on the authority of Mr. Bostock of Swan River, that it is known there under the name of "*Perth Herring,*" quantities being smoked with Banksia or sawdust, and sold in the fruit stores. It is not probable however, that it will ever become an important article of consumption, as it is evidently not gregarious in its habits.

4. CHATOËSSUS RICHARDSONI, Castelnau.

Proc. Zool. and Acclim. Soc., Victoria, Vol. 11, p. 144.

This species differs from the preceding according to Count Castelnau in being of a more convex and less elongate form, and in having the last dorsal ray much shorter than in the other species, in fact little less than half the length. It is found in all the Western rivers which fall into the Murray. Count Castelnau states that it is much esteemed as food in the Melbourne Market and sells at a high price, the same author states that Blandowski enumerates it among the Fishes he found in the Murray River, that it is called by the natives "*Manur*", and adds that it "leaps frequently out of the water, and is easily caught by its elongated ray in thin fine nets, laid by the natives horizontally on the water. The Fish gets entangled in the twine and cannot escape. It is most numerous in the Darling, but is also found about and below the junction of the Murray and Darling Rivers. In June and July it is considered a delicacy by the natives, and forms their principal food during these two months. The young women are not permitted to eat them, from a belief that if they did, all the fishes in the river would die; but in reality, because it is thought to be an aphrodisiac, this Fish being very fat and nourishing.

upper part of the Brisbane River, and would appear to be far from common. Nothing is said of its qualities as a food fish. Its affinity seems to be more with *Megalops* than *Chatoëssus*.

6. CLUPEA SAGAX, (Jenyns).

Zool. Beagle, Fish, p. 134, Gunth., Cat., Vol. 7, p. 443.

Alosa melanosticta, Cuv. and Val., Vol. XX., p. 444.

This species which is almost identical with the English Pilchard is thus described by Dr. Gunther :—" The height of the body is one fifth of the total length (without caudal), the length of the head rather more than one-fourth. Lower jaw but slightly prominent; the maxillary extending nearly to the vertical from the middle of the eye. No teeth on the palate or on the tongue. Gill rakers very fine and long, closely set. Ventral fins inserted below the posterior half of the base of the dorsal. Origin of the dorsal fin nearer to the end of the snout than to the root of the caudal. Abdominal serrature very indistinct; there are about eleven abdominal scutes behind the base of the ventral fins. Operculum with very conspicuous radiating striæ, descending towards the suboperculum. Scales slightly and finely striated, the striæ being most conspicuous on the margin. The scales become very small towards the root of the caudal fin. A series of more or less distinct round blackish spots along the side."

"Pacific Coasts of America; Japan; New Zealand."

Count Castelnau (Proc. Zool. and Acclim. Soc. of Victoria, Vol. 1, p. 187.) points out that Dr. Gunther is right in his view that this species is identical with the *melanosticta* of Cuv. and Val. and is not the same, as stated by Professor M'Coy, as the *melanosticta* of Schlegel. He also quotes the following account given by Professor M'Coy of the appearance of this Fish in Port Phillip: "A specimen was first brought to me in August 1864, from a small shoal then seen for the first time in Hobson's Bay, and quite unknown to the fishermen. * * * In the same month, in the succeeding year they appeared in great abundance in the Bay, and were caught by thousands for the market. After remaining for a few weeks they disappeared until the same time in 1866, when they arrived in such countless thousands, that carts were filled with them, by simply dipping them out of the sea with large baskets. Hundreds of tons were sent up the country to the inland markets, and through the city, for several weeks they were sold for a few pence the bucketful, while the captains of the ships entering the Bay reported having passed through closely packed shoals of them for miles." Professor M'Coy has, I should think, been misinformed as to the year 1864 being the first appearance of this fish in Victoria, I have seen it in Port Jackson years prior to that date, where it was known under the name of "Sardine," but it is not unlikely that though annually visiting our coasts, it may be an accidental occurrence, a portion of the shoal actually entering the harbours.

There is much that is curious about the migrations of this fish. All the shoals which pass here in winter are going north, the shoals visiting Otago in summer are moving south. Are they the same fishes returning to their homes in the Antartic Seas after months of travel in search of spawning grounds? If so, how far north do they go? and where are their breeding grounds?

The species appears to be unknown in the warm seas of the north of Australia. Dr. Bleeker makes no mention of it in his elaborate works on the Fishes of the East Indian Archipelago; Dr. Cantor does not mention it in his "Fishes of Malacca," and I never came across a specimen of it during my fishing excursion in the "Chevert" along the North-Eastern Coast of Australia, Torres Straits, and the South Coast of New Guinea. It must be born in mind however, that it is found in California, Japan, and other temperate regions north of the Equator, so that it is not by any means certain that it may not penetrate into the tropical regions of the Pacific. But, if so, it is most probable that the course taken is outside the great Barrier Reef.

7. CLUPEA SUNDAICA. Bleek.

Atlas Ichthyol. Clup., p. 105, Pl. 271, fig. 5.

Clupea fimbriata, Bleek., not of Valenciennes.

The following is a translation of Dr. Bleeker's description of this Fish:—

"Body, oblong, compressed; height, 3 to 3½ times in the length without, and 3¾ to 4 and one-fifth with, the caudal fin; the width of the body 2⅓ to 3 in its height; head, 4 to 4½ in the length of the body without the caudal fin, and 5 to 5⅓ with it, considerably shorter than the height of the body, as high as its length, and its width 2 to 2½ in its length; on each side of the vertex a number of somewhat diverging striæ extending backwards; the diameter of the eyes 3 to 3½ in the length of the head, and from two-thirds to three-fifths of their diameter apart, the palpebral membrane broader in front than behind, and in part covering the pupil; upper maxilla without teeth, and reaching to the vertical from the anterior margin of the eye and about 2½ in the length of the head; the lower jaw scarcely prominent, the symphysis with denticles more readily felt than seen; no pterygoid teeth, those on the palate disposed in a long row, and on the tongue in a median line; præoperculum obtusely rounded; operculum smooth, scarcely striated in the middle, in height more than double the breadth, with the inferior margin straight; the ventral outline conspicuously more convex than the dorsal; the scales generally transversely striated on the basal part, and longitudinally on the free part, and crenate-fimbriate, numbering about 45 in a longitudinal series from the upper angle of the branchial aperture to the base of the caudal fin, and 11 or 12 in a transverse series under the dorsal fin; belly very knife-shaped and serrated with about 30 spines, becoming less conspicuous with age; the dorsal fin situated about half-way compressed body, its deciduous scales, and the bright golden vitta on each side near the back. It is about seven inches in length. My first acquaintance with it was about three weeks ago, when a shoal seems to have visited the harbour, and I found one morning the beach at Elizabeth Bay strewed with bushels of them, left by a fisherman who had hauled his seine there during the night, and taken away I believe as many as he conveniently could. I find however, that it is a fish well known to the fishermen, called by them "*herring*," and sometimes "*Maray*," though that name more properly belongs to *Clupea sagax*. Like that species also, it visits our coasts in winter in enormous shoals, and also always travelling in a northerly direction. It seems probable, however, from what the fishermen tell me, that its breeding grounds are not far distant, as some of them are to be found in the Hawkesbury, about Mullet Island, at all seasons of the year, and the young fry of apparently the same species are sometimes very abundant there. Dr. Bleeker gives Java and Celebes as localities in which this fish is found, sometimes, he says, they are caught in great numbers, and form a very important part of the food of the population of these countries. I can myself vouch for the excellence and delicacy of flavour of these beautiful fishes. I look upon them as far superior to the common herring of Scotland as an article of food, and I verily belive that preserved in oil in the manner of sardines, they would eclipse even these delicacies.

8. CLUPEA HYPELOSOMA, Bleek.

Atlas Ichthyol. Clup. p. 104, Pl. 267, fig. 2. Gunth. Cat. Fish. Vol. 7, p. 431.

This species is very like the last. It is proportionally deeper, the maxillary bone seems to extend back under the eye further than in the other, and there is no golden band along the upper part of each side. I subjoin the specific characters given by Dr. Gunther, Dr. Bleeker's being unnecessarily elaborate.

D. 18, A. 20, L. lat. 44, L. transv. 12.

"The length of the head is contained four times and one-fourth in the total (without caudal), the height of the body twice and three-fourths; head nearly as deep as long; scales regularly arranged, firm, adherent, with the margins serrated and irregularly crenulated; abdominal and dorsal profiles equally convex; lower jaw slightly projecting beyond the upper; snout short, *maxillary extending nearly to below the middle of the orbit.* A narrow strip of teeth on the palatine and pterygoid bones, none on the verner; tongue with a median longitudinal toothed ridge. Opercles smooth. Gill rakers very fine and closely set, a little shorter than the eye. Eye as long as the snout, contained thrice and one-third in the length of the head. Ventral fin inserted below the posterior half of the dorsal fin, which occupies the middle of the distance between the end of the snout and the root of the caudal fin. There are thirteen specimens in the Sydney Market, and also one specimen from Brisbane. It seems, however, to be very different in its deep and compressed form from the species to which Dr. Bleeker gives that name.

The Count's description is as follows:—

"The body is very compressed; height contained twice and one-third in the total length, without the caudal; head, three times and a half in the same; the lower jaw is larger than the upper one, and when the mouth is shut the opening is upwards; snout very short; maxillary very large, and extending further than the anterior margin of the eye; this is large, and only contained twice and a half in the length of the head; dorsal, with seventeen rays; caudal, very forked; anal, low, with eighteen rays, the ventrals are inserted a little behind the pectorals; mouth, very extensible; tongue smooth; the serrature of the belly extends higher than the pectorals; of a beautiful azurine blue on the back, the rest very silvery; head, gilt; fins, of a light yellow; the dorsal with its extremity, and a faint transverse band, black, seen in the sun there seems to be a longitudinal white stripe on the body between the blue and silvery."

The proportions of the eye to the head given above would lead me to believe that this is the *Clupea Kunzei* of Dr. Bleeker, a species which Dr. Gunther does not recognise as distinct from *Moluccensis*, but which Dr. Bleeker himself regards and describes as very different. The great height of the body, however, given by Count Castlenau—2⅓ in the total length exclusive of the caudal fin,—precludes the possibility of its being *Kunzei*.

I have been unable to get information of any kind as to this fish.

10. CLUPEA TEMBANG. Bleek.

Atlas Ichthyol. Clup. p. 106, Pl. 266, fig. 6.

Clupea gibbosa of the same author.

The following is Dr. Gunther's description (Cat. Fish., Vol. 7, p. 426):—B. 6. D. 18. A. 18-19. L. lat. 45. L. transv. 12.

"The height of the body is a little more than the length of the head, which is one-fourth of the total (without caudal); head, longer than deep; scales, regularly arranged, rather firm and adherent, with the margin very indistinctly striated; abdominal and dorsal profiles nearly equally convex; lower jaw projecting beyond the upper; snout of moderate length, maxillary not extending to below the middle of the orbit; a narrow strip of minute and deciduous teeth on the palatine bones, none on the vomer; tongue with a very narrow median band of minute teeth; cheeks with very fine radiating striæ; opercles, smooth; gill rakers, fine and closely set, shorter than the eye; eye shorter than the snout, a little more than one-fourth of the length of the head; ventral fin inserted below the middle of the dorsal fin, the origin of which is considerably nearer to the end

Fishes. Dr. Gunther describes the species thus:—B. 8. D. 16. A. 16. L. lat. 48. L. transv. 11. Cœc. pyl. 14. Vert. 47.

"The length of the head is contained four times and one-third in the total (without caudal), the height of the body four times. Scales regularly arranged, firm, adherent, smooth. Lower jaw rather prominent, the maxillary narrow, extending a little beyond the front margin of the orbit. A small patch of distinct teeth anteriorly on the palatine bones; none on the pterygoid bones. A series of teeth along the median ridge of the tongue. Opercles, smooth; *sub-operculum, narrow, tapering behind; gill rakers fine and closely set, half as long as the eye.* Eye as long as the snout, which is of moderate extent, two-sevenths the length of the head. Ventral fin inserted below the anterior half of the dorsal fin, the origin of which is nearer to the end of the snout, than to the root of the caudal fin. There are fifteen abdominal scutes behind the base of the ventral fin, their spines much projecting. Silvery, dorsal and caudal fins brownish."

This is a beautiful little fish, about five inches in length, and is well known as the "herring" in all the tributaries of the Hawkesbury, but I have not heard of it in any other of our East Coast rivers, and it is certainly never found in the Western rivers. Angling for this Fish is a favourite sport in some of the upper waters of the Nepean. It is of no great value as a food Fish.

12. CLUPEA VITTATA, Castelnau.

Meletta Novæ Hollandiæ, Castelnau, Proc. Zool. and Acclim. Soc., Victoria; Vol. 1. p. 189.

Count Castelnau described this species under the belief that it was the true *C. Novæ Hollandiæ*, and on discovering his mistake suggested the specific name *vittata*. He describes it thus:—"Height four and a half times in the total length; head five and a half in the same; eye as long as the snout, and contained three and a half times in the head; the lower jaw longer than the upper, mouth extensible; no teeth on the palate; maxillary extending to below the front edge of the eye; body compressed; forty-six scales on the longitudinal line; sixteen rays to the dorsal; twenty to the anal; the caudal has nineteen rays with five short ones on each side; the pectoral fourteen rays. The height of the first ray of the dorsal is equal to the distance from the end of the snout to the anterior (? posterior) edge of the eye; the other rays go on decreasing as they extend backwards, and the last are only half the height of the first; the caudal is very strongly bifurcated, being twice as long on its sides, as at its centre; the ventrals are as long as the dorsal, and a little shorter than the pectorals. The general colour is of a light green, with a broad well-marked silvery streak on each side; the belly is white; the operculum and throat are silvery and iridescent; the dorsal and caudal are yellow, and the other fins translucent; the eye silvery."

This fish, the Count tells us is at times abundant in the end of this fin. Head contained four times in the length (without caudal); eye twice and three-fourths in the head. The snout is considerably shorter than the diameter of the eye; the lower jaw much longer than the other; the maxillary extends to below the first-third of the eye; the cheeks and the two opercles are finely striated; the lower profile is rather more convex than the upper one; scales regularly arranged, rather firm; they are strongly striated with the margin finely crenulated; dorsal of nineteen rays, the end of this fin is at an equal distance from the snout and the end of the tail. The caudal is deeply forked, of sixteen long rays, with several shorter ones on each side, anal of 28 or 29 rays; the ventrals are small; the pectorals are nearly twice as long, of sixteen rays. The general colour is bright and silvery, with the back of a light purple; the anterior part of the head and fins are yellow; the operculum gilt. Length three inches."

The species comes from Port Darwin. The most distinctive character seems to be the number of the anal rays, I know no *Clupea* with such a number. Nothing seems to be known of its history.

15. SPRATELLOIDES DELICATULUS, Benn.

Gunth. Cat. Fish, Vol. 7, p. 464, *Clupea Macassariensis*, Bleek. Atlas, Ichthyol. Clup., p. 96, pl. 264, fig. 3.

The following is Dr. Gunther's description of the species:—"'B. 6. D. 11. A. 9. §. lat. 35.' The height of the body is one-sixth, or rather more than one sixth of the total length (without caudal) the length of the head one-fourth. Snout rather pointed, longer than the orbit, with the lower jaw slightly projecting beyond the upper. Maxillary rather broad and extending to the vertical from the front margins of the orbit. Origin of the dorsal fin nearer to the end of the snout than to the root of the caudal, ventrals inserted below the posterior third of the dorsal fin. Back dark-coloured, sides and belly silvery, the two colours sharply defined."

In the second volume of the Proceedings of this Society, page 351 will be found an account of the large numbers of this Fish seen by the members of the "Chevert Expedition" at Darnley Island, in August 1875. There can be no doubt that it is a very delicate and delicious fish, and might be utilized to great advantage It is found in most parts of the Indian Archipelago. Dr. Bleeker mentions that an allied species—*Spratelloides gracilis* is much used in Celebes in the manufacture of the "Red Fish," *(Ikan Mereh)* —mentioned a few pages back, when treating of the genus *Engraulis*—and it forms a large article of export from Macassar.

16. ETRUMEUS JACKSONIENSIS, McLeay.

Proc. Linn. Soc., N.S. Wales, Vol. 3, p. 36, pl. 4, fig. 1.

This genus is readily distinguishable from the rest of the *Clupeidæ*, by the entire absence of compression or serration of the abdomen, and the position of the ventral fins quite behind posterior part of the suborbital ring. Uniform silvery." *(Gunther.)*

This very beautiful fish is only occasionally taken in Port Jackson. It is probably less rare farther north, as it is chiefly in tropical seas that it is found, and that in all parts of the world. Sir John Richardson gives a good figure of it in the Voy. Ereb. and Terr., Fish, p. 59, pl. 36, fig. 3—5., under the name of *Elops machnata.* Dr. Bleeker says of it, that though the flesh is good, the fish is not in much request.

18. Megalops cyprinoides, Brouss.

Gunth. Cat. Fish, Vol. 7, p. 471.

"B. 23-26. D. 17-20. A. 24-27. L. lat. 37-42. Vert. 28/29."

"Ventral fin inserted below the origin of the dorsal; maxillary extending to below, or even somewhat behind, the posterior part of the orbit. From the East Coast of Africa, to Polynesia and Australia; entering fresh waters. *(Gunther).*"

This is a species of very wide range. It is found in the Hawkesbury, and I have specimens from Port Darwin. It is considered identical with *Megalops setipinnis* of Richardson, and the *Elops cuddinga* of Dr. Cantor, "Fishes of Malacca, p. 289." The adult fish is about a foot in length, and Dr. Cantor says that notwithstanding their numerous fine bones they are valued for their flavour, and are rapidly multiplied and fattened for use in tanks.

19. Chanos salmoneus, Bl.

Gunth. Cat. Fish., Vol. 7, p. 473.

"B. 4. D. 13-17. A. 9-10. L. lat. 85-88. L. transv. 13/16. Vert. 19/26."

"Uniform silvery."

These are all the specific characters given by Dr. Gunther of this Fish, though it has synonyms without number. In fact the species is very subject to variety, and it becomes consequently difficult to find good definitions. The genus, however, is very distinct and well defined. Count Castlenau has added the name of this Fish to his list of Port Jackson Fishes, but it certainly must be a very rare visitant. It is, however, common enough on the Northern Coasts, and I have had specimens from Fiji, always found in fresh water. This is the most prized of all the Herring tribe for the excellence of its flavour, and in many parts of India it is domesticated and kept in large tanks for the use of the wealthier inhabitants. Its length is about two feet. If a little of the enterprise exhibited in the efforts that have been made to introduce the Salmon into our rivers, was expended upon the cultivation of this Fish in our coast rivers north of the Clarance, the result, 1 venture to say, would be much more satisfactory.

In the foregoing pages I have enumerated all the species of [redacted] utilized to an almost unlimited extent in various ways, scarcely admits of question. The establishment, however, of a new industry, such as a Herring Fishery would be here, is always a difficult and costly thing, and not to be undertaken with the hope of immediate returns. The British Fishery Society, established about the end of last century, for the prosecution of the Herring Fishery in the North of Scotland, laboured for many years before the Fishery became a complete success, and they were for many years largely assisted by the Government with grants, bounties, &c. So it must be here, before much can be done; and until a liberal Government or a wealthy company undertake the task of establishing Fisheries on our shores, all we can attempt is to endeavour to make ourselves better acquainted with the history and habits of the finny tribes. It is most desirable that all those who have the opportunities, such as fishermen, masters of coasting vessels, &c., should make notes of *where* and *when* they came across shoals of fish—the *kind* of fish, of which a specimen or two should be put into spirits for identification—the *direction* in which the shoal is moving—the apparent extent of it—whether they are full or spent fish—and any other remarks occurring to the observer at the time. I shall be very glad to receive and register all such observations, which even if they are of no further use, will certainly help in the solution of two points—*where* and *how* to fish to the best advantage for the different species.

NOTES ON THE GENUS *Cypræa*.

BY JAMES C. COX, M.D., F.L.S., &c.

The various species of the genus *Cypræa* are, as a rule, well defined in their characters, but several which are found in our neighbouring waters vary sufficiently in shape and colouration to make it worth while to have these variations noted so as to prevent a creation of new species from what are mere varieties. In some species found at New Caledonia the altered shape of the shell is so marked that it really amounts to a distortion, still this has been found no excuse for creating these deformities or varieties, as we choose to look upon them, into new species. Take for instance the *Cypræa Eglantina* of Duclos, which is, undoubtedly, only a variety of *C. Arabica*; again, the elongated, distorted specimens of *Moneta*, from New Caledonia, were described and named as a new species by Crosse under the name of *C. Barthelemyi*, and is now only considered a variety, being found in all stages of transition; distorted specimens also of *C. annulus* were named by Marie as a new species under the name of *C. knomeensis*. *C. Crossei* of Marie can only be regarded as a distorted variety of *C. stolida*; and recently I have seen other well marked species varying quite as much as those enumerated from the fine collection of Mr. Rossitor, in New Caledonia; the species seem to vary more, especially in shape, from the last of placing this beautiful rare variety on record. I would suggest that it be designated variety, *alba.*

EXHIBITS.

By Dr. Cox.—1. A pure white variety of *Cypræa umbilicata* from Tasmania. 2. *Ovulum gigas* from the Post Miocene formation in Victoria. 3. The fruit of the Lisbon Lemon from a plant with variegated leaves, showing the same kind of striations as the leaves. 4. A peculiar malformation of the Navel Orange, all the fruit of the tree partaking of the same character.

By E. P. Ramsay.—Several very large specimens of a fresh-water *Entomostracan,* a new species of *Lepidurus* from the Hunter River. Also a beautiful series of bones and teeth of a fossil fish *(Ctenodon Ctenodus ?)* from the Newsham Coal measures, received from Dr. Barkas.

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WEDNESDAY, AUGUST, 27TH, 1879.

The Vice-President, W. J. Stephens, Esq., M.A., in the Chair.

DONATIONS.

Societe Entomologique de Belgique, Compte Rendus, Nos. 63, 64, and 65.

Australian Medical Journal of Victoria, No. 7.

Verhandlungen des Vereins, fur Nalurwissenschaftliche Unterhaltung zer Hamburg, 1878.

PAPERS READ.

SYNONYMY OF, AND REMARKS UPON PORT JACKSON, NEW CALEDONIAN AND OTHER SHELLS, WITH THEIR DISTRIBUTION.

BY JOHN BRAZIER, C.M.Z.S., CORR. MEM. ROY. SOC., TAS., &c.

1. CORBULA SMITHIANA.

Corbula venusta, Angas, Proc. Zool. Soc., 1871, p. 20, pl. 1, fig. 29.

Hab. "Sow and Pigs" Reef, 3—4 fathoms, sand bottom; mouth of Lane Cove River, 4 fathoms, bottom broken shells.

Mr. Angas' name is preoccupied by Dr. Augustus Gould, he having described a *Corbula venusta* from Hakododi Bay, Japan, in the Proceedings of the Boston Society of Natural History, (see his Otia Conchologica, p. 164.).

I have changed the name as above, in honour of Mr. Edgar A. Smith, F.Z.S., the indefatigable worker in the Conchological department of the British Museum.

Hab. Between Balls' Head and Goat Island, Port Jackson, New South Wales, 15 fathoms, bottom broken shells, sand and Balanus.

I only obtained one specimen, it is deposited in the British Museum. Mr. Sowerby in Reeve. Conch. Icon., gives Australia, and in the Thes. Conch. he, without reason, gives the Pehio River. *Lampania Cumingi* is certainly from the Pehio River, but not *Lampania angulifera.*

4. SCUTELLINA CINNAMOMEA.

Patella cinnamomea, Gld., Otia. Conch., page 9—242.

Scutellina cinnamomea, Angas, Proc. Zool. Soc., 1871, p. 97.

Scutellina ferruginea, A. Adams, Genera Moll. pl. 52, fig. 6, 6a.

Hab. New South Wales, *(Gould).* Middle Harbour, Port Jackson, *(Brazier).* Elizabeth Bay, Port Jackson, *(Masters).* Noumea, New Caledonia, *(R. C. Rossiter).* Isle Nou, near Noumea, *(M. Roux)*:

It is a thin brown species, very finely sculptured, and of very rare occurence, the specimens from New Caledonia are somewhat eroded on the outer surface; in Port Jackson it is found under stones, some five years ago Mr. Masters happened to turn a small stone at Elizabeth Bay and obtained six living specimens, no more have up to the present time been found there.

5. PAPHIA STRIATA.

Mactra striata, Gmelin, p. 3257.

Crassatella striata, Lam. Anim. Sans. Vert. 2nd Edit. tome. VI. p. 112.

Paphia striata, Schmeltz, Mus. Godeffroy, Cat. V., p. 166, 1874.

Hab. New Caledonia, New Britain, New Ireland, and other islands in the north and central Pacific, and on the Australian Coast from Moreton Bay on to Torres Straits.

Mr. J. D. E. Schmeltz in the Godeffroy Catalogue mentions Sydney as another locality. The collectors sent out to Australia by the great German firm Messrs. Godeffroy & Son, may have bought specimens in the shell shops about Sydney, but that does not show that they inhabit the waters of Port Jackson; it is like buying *Voluta fusiformis* in London and saying that it was found in the River Thames. I can positively assert that *P. striata* never was found either in the Harbour of Port Jackson or any part of the coast of New South Wales living or dead; after 25 years of hard conchological work wading and dredging I can give an opinion on the subject.

In the same Catalogue V., page 181 the author gives *Lingula anatina*, Lam., Sidney (Sydney); this is another shell-shop species. the only species found in Port Jackson is *Lingula hians*, Swainson, and very rare; I found one living specimen in twenty-five years. *Lingula anatina* is found rather common in mud flats at Moreton

At page 140 *Tritonium Quoyi*, Reeve, Port Denison. It is found in St. Vincent's and Spencers' Gulfs, South Australia; Tasmania and Islands in Bass' Straits.

I think that when foreign collectors visit Australia they should keep true records of their species, with localities; they appear to know about as much of Australia as I do of the North or South Pole.

6. CARDIUM FORNICATUM.

Cardium fornicatum, Sowerby, Conchological Illustrations, fig. 50

Cardium fornicatum, Sowerby, Proc. Zool. Soc., 1840, p. 110.

Cardium fornicatum, Reeve, Conch. Icon., 1845, pl. XX., species 110.

Hab. Bourail, New Caledonia, deep water, (Coll. Lieut. Heurtél).

At the time I exhibited this specimen, some months ago, before the Society, I considered that it was new to science, since then I have gone to a great deal of trouble in reading up the descriptions of the various species described by Mr. G. B. Sowerby in the Proceedings of the Zoological Society of London, 1840, and the very good figure given in his Conchological Illustrations and the figure given in Mr. Lovell Reeves Conchologia Iconica. I give Mr. Sowerby's own words when described:—"It is a very beautiful shell, in some respects resembling *C. medium*, but not so angular, and having the ribs ornamented by vaulted imbrications in the centre, and very minute crenulations raised into points at the sides, unfortunately we possess no information respecting the locality. Reeve in 1842 does not know the locality, but says that the chief peculiarity of this remarkable shell, which is at present unique in the collection of Mr. H. Cuming, consists in the ribs having a double pattern of sculpture, being surmounted with a close set row of small vaulted scales, whilst the sides are minutely crenulated."

The specimen before me dredged at Bourail, New Caledonia, by Lieutenant Heurtél, French Navy, answers in every respect to the description of Sowerby. The interior is far before those known to Reeve and Sowerby, it is of a fine rich salmon colour, bordered with dark mauve, having the anterior edge white; posterior end bordered with light mauve, forming a margin round the lower edge. The rich colour may be compared to the salmon mauve and rose pink *Trigonia Lamarckii*, Gray.

LIST OF LAND SHELLS FOUND ON THURSDAY ISLAND, WITH DESCRIPTIONS OF THE NEW SPECIES.

BY JOHN BRAZIER, C.M.Z.S., CORR. MEM. ROY. SOC., TAS., &C.

During a short visit paid by Mr. C. E. Beddome, in 1877 to Thursday Island, one of the Prince of Wales Group in Torres

2. HELIX (TRACHIA) DELESSERTIANA.

Helix Delessertiana, Le Guillou, Revue Zool., 1142, p. 138.

Helix Delessertiana, Pfr. in Mon. Helic. Viv. 1848, Vol 1, p. 202.

Helix Delessertiana (Vallonia), Cox, Cat. Aust. Land Shells, p. 18, 1864.

Helix Torresiana, Homb. et Jacq., Voy. au Pole Sud., Vol. V., p. 10, pl. IV. fig. 24.

Helix Delessertiana (Trachia), Brazier, Proc. Linn. Soc., N.S.W. Vol. 1, p. 123.

Le Guillou's specimens came from Warrior Island. During the Chevert Expedition, we landed for about half a day, but did not procure any living ones, it was very common in the dead state along with *Helix semicastanea* and *cyclostomata;* the season being dry every thing appeared burnt up. I also found it plentiful at Bet, Sue, Cocoa Nut, Dungeness, and Darnley Islands, all in the Straits, the examples from Darnley were obtained at 600 feet elevation, in clusters of stones at the roots of grass, found at Cape York and Albany Island, North Australia, under decayed wood and leaves near the sea.

The nine examples from Mr. Beddome do not differ in the least from those found at the other Islands.

3. HELIX (PATULA) SPALDINGI.

Helix (Patula) Spaldingi, Braz., Proc. Linn. Soc., N. S. W., 1876, Vol. 1., p. 103.

Var. *carinata.* Shell turbinately depressed, whorls 4, periphery carinated, irregularly finely striated, nearly obsolete on the last whorl. Maj. 2¾, min. 2⅛, alt. 1¾, lin.

The Thursday Island examples I distinguished as variety *carinata*, the twenty-one specimens have the character of being more conical and are in every respect a larger shell. The typical form is found at Cape York and Albany Island, North Australia; also Bet, Sue, Cococa Nut and Warrior Islands, Torres Straits; the type of the variety I have deposited.in the British Museum.

4. HELIX (PLANISPIRA) BUXTONI, *n. sp.*

Shell umbilicated, depressed, thin, slightly shining, brownish horn under a velvety periostraca; faintly obliquely striated; suture distinctly impressed, covered with short, minute, sharp-pointed stiff hairs; spire small, apex slightly raised, granulated, whorls 4½, convex, last large and rounded; deflected in front, base convex with a few minute scattered hairs; umbilicus rather wide outwardly, aperture diagonal, lunately rounded, peristome flesh tinged, expanded, margins approximating, right thin, columellar margin regular, finely granulated, broadly reflected, but not covering the umbilicus. Diam. maj. 6, min. 4¾, alt. 3

5. BULIMUS BEDDOMEI.

Bulimus Beddomei, Braz., MSS. Proc. Linn. Soc., N.S.W., 1876, Vol. 1, p. 127.

The only difference between this and *B. Macleayi*, Braz., described in these Proceedings 1876, Vol. 1., p. 108, is that the specimens are a little smaller, thinner in structure, pale yellowish brown, irregularly streaked with darker yellow, oblique-narrow lines; umbilicus smaller, the columellar margin expanded in a thin reflected plate over the perforation.

	Length,	breadth,	lgth aper.,	width lin.	
Thursday Island specimen	6	3¾	3½	2½	,,
Port Darwin specimens	6¾	4	3¾	3	,,

Mr. Beddome obtained his first specimens at Mount Ernest Island, Torres Straits in 1875, on small trees only in one part of the Island, the Port Darwin ones were obtained at Fannie, or Fanny Bay in 1877 by Mr. Edward Spalding, the indefatigable Zoological Collector who was collecting there for six months, for the Hon. W. Macleay, F.L.S.; the specimens were found on trees under the loose bark.

I have a specimen sent to me from the late Mr. Charles Coxen, said to have been got at the Andromache River, between Bowen and Cape Palmerston, North East Australia; it is so transparent, like the Mount Ernest Island specimens, that I have every reason to believe that it came from there. *B. Macleayi*, is also found on trees at Yule Island, New Guinea, in the wet season; in the dry season at the roots of trees in crevices of coral forming the East side of the Island, it was not found in any other part of the island.

6. HELICINA RETICULATA.

Helicina reticulata, Pfr., Proc. Zool., Soc., 1862, p. 277, Mon. Pneum. Vive. Supp. 1865, p, 235., Cox, Monog. Austral. Land Shells, 1868, p. 106, pl. 17, fig. 14.

The twenty examples received from Thursday Island do not differ either in markings or sculpture from those found so plentifully at Cape York and Albany Island, North Australia.

NOTE ON AN UNDETERMINED SPECIES OF LALAGE.

By E. P. Ramsay, F.L.S., &c.

LALAGE.

Lores, and all the upper surface of the head, neck, back, wings, and tail, black, with a faint greenish-metallic gloss, primary coverts and shoulders black; median coverts white, with black shaft-line; secondary coverts black, with white tips; scapulars more white than black; inner secondaries black, with a white

This species comes near to *L. atrovirens*, but is smaller, the plumage soft and fluffy, the rump is of a bluish-grey tint, and the outer three feathers on either side largely tipped with white; the wings short; under tail-coverts long; it agrees neither with Mr. Sharpe's description of *Symmorphus nævia*, nor *S. leucopygialis;* it is not improbable that *S. nævia* is the ♀ of *S. leucopygialis*, nevertheless, we have specimens of both species in the Museum. I am inclined to the belief that all three belong to one and the same species.*

NOTES AND EXHIBITS.

Figian Fossils.—Mr. Macleay read the following extracts from a letter he had received from A. Boyd, Esq,, Waidau, Figi, in answer to enquiries respecting the Figian Fossils described by the Rev. J. E. Tenison-Woods at the last monthly meeting:

"Respecting the fossils, I sent you all I had, and I fear it would pay neither of us to go for more. I should have to make a journey of some 120 miles to get to the place, and the cost of carrying such heavy things to the coast, distant about 40 miles by road would be great.

"I first met with these fossils on the summit of a hill 25 miles from Nadi, called Kow-balann, 1,350 feet (approximate) above sea level."

To this Mr. Boyd appends the following note: "The rock containing them was called by the natives "Vatu-cakau," (chacrau), or literally "Reef Rock." Mr. Boyd goes on to say, "Those you have however, were found further in the interior, near the Government Camp, and about 200 feet above sea level. The country is greatly broken up in hills and valleys, running in no general direction, and resembling on an immense scale the waves of the sea after a storm. The whole surrounding country is volcanic, and covered with grass, a few small patches of forest showing at intervals. On crossing the river "Wai-roro," the head water of the "Siga-toko," the bottom of which is covered with large water-worn pebbles of various colours, and passing through a native town situated on a small flat on the bank, one commences to ascend a road over what appears to have been coral once in a state of ignition. Blocks of this, resembling in appearance the dead coral now found above high water mark, have been piled on one another. They are dark in colour and hard and brittle as glass, taking a high polish in the track, from the friction of countless feet. After ascending about a quarter of a mile, a small flat is reached at the foot of a cliff, and there in apparently unburnt coral, the fossils are found. In this cliff is the limestone cave in which *Notopterus Macdonaldii* is found."

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* Since the above was written I find a new species has been described from the South Sea Islands, which is probably the same.

J. Brazier, Esq., C.M.Z.S., exhibited a *Cardium fornicatus* from

WEDNESDAY, SEPT., 4TH, 1879.

W. J. Stephens, Esq., M.A., the Vice-President in the Chair.

The Chairman introduced Dr. Von. Haast, of the Otago Museum and Mr. Cowlishaw as visitors.

DONATIONS.

From Baron F. Von. Mueller, K.C.M.G., "Eucalyptographia," 1st and 2nd decades.

From the Microscopical Society of Victoria, Quarterly Journal Vol. I., No. 1.

From the Royal Society of New South Wales, Journal for 1878.

From the Conchological Society of Leeds, five numbers of the Journal for 1879.

From the New Zealand Institute, Transactions for 1878.

From Verhandlungen Zoologisch—Botanischen Gesellschaffte in Wien, 1878.

PAPERS READ.

LIST OF BRACHIOPODA OR LAMP SHELLS FOUND IN PORT JACKSON AND THE COAST OF NEW SOUTH WALES.

BY JOHN BRAZIER, C.M.Z.S., CORR. MEMB. ROY. SOC., TAS.

Some few months ago I sent Mr. Thomas Davidson, F.R.S., the greatest living authority on the Brachiopoda, a series of various rare species found in Port Jackson, and one from the Loyalty Islands, having kept corresponding numbers with my specimens. I give my list below :—

1. *Magas Cumingi*, Davidson, this I take to be the type.
2. *Magas Cumingi?* Davidson, I take this to be a variety of No. 1.
3. *Terebratula pulchella*, Sowerby, I take it to be that species as per British Museum Catalogue and Thes. Conch.

4. *Terebratula sanguinea*, Chem. and Davidson. Lifou, Loyalty Islands.

5. *Terebratulina cancellata*, Koch., Sowerby, and Gray. I take it to be that species from the description by Mr. Sowerby, in Thes. Conch. The British Museum Catalogue, by Dr. J. E. Gray, gives but a brief description.

I herewith give Mr. Davidson's notes and remarks received by last mail on the above mentioned five species.

1. MAGASELLA CUMINGI, *Davidson*, (my No. 1).

"During many years after I had described and figured this remarkable species, and indeed until fourteen months ago, no one in Europe knew exactly where this shell lived. Mr. Cuming had a specimen or two, one of which I described, and he told me he had been told it came from New Zealand seas, but the New Zealand Naturalists with whom I corresponded told me they had never found it in their waters.

"Your No. 3., *Megerlia pulchella*, Sowerby. Is a species? with which I am not fully satisfied, it may be *distinct* from *Megerlia sanguinea*, but most Naturalists seem to believe that it merges into *sanguinea* and of which it may be a variety. I dare not yet pass a positive opinion on the subject, and for the present the name *pulchella* may be retained.

Your No. 4., is *Megerlia sanguinea*. This is a beautiful small species, it seems to occur in a good many places. Mr. Tenison-Woods sent me specimens of the shell from Bird Island, North Australia. It abounds near the Island of Zebu. I am extremely pleased to have it through your kindness from Lifou, Loyalty Islands, it was also dredged by the Challenger Expedition from Reefs Tamboanga, you have added several localities which I shall duly record in your name in appendix to Challenger Report.

We come to No. 5., the last of the series, it is a *Terebratulina*, one of that very variable and far spread genus, and of which too many speecies have been created or proposed. *Terebratulinas* were extensively dredged by the Challenger Expededition in many places and many latitudes and often difficult to distinguish one from the other. Your discovery of specimens of this genus in Port Jackson waters is new, I believe, as I had never heard or seen any from there before. I have been very pleased to see specimens from there. *Terebratulina cancellata* was dredged, and in great abundance by the Challenger Expedition, near the West Australian Coast of   Isle. The species of which I have seen and handled nearly a 100 of all ages, when full grown is a large shell, but not the largest of the genus, as my *Terebratulina Wyvillei*, from St. Thomas, is four times as large as *Terebratulina cancellata*. Your two specimens may be referable to *Terebratulina cancellata*, but are small (compared with full grown specimens of shell), and seem to differ somewhat with examples of equal dimensions, they are comparatively more convex, and are evidently a marked variety of *cancellata*, if not a distinct species. I am very pleased to have them.

From what I can make out, the Australian species of recent Brachiopoda would be, (or of which I have seen specimens) *Terebratulina cancellata*. *Terebratulina* (the specimens you have recently dredged in Port Jackson). *Waldheimia australis*. *Magasella Cumingii*. *Megerlia sanguinea*. *Megerlia pulchella*. *Kraussina Lamarckiana*. *Kraussina Atkinsoni*, Woods, M.S., a smooth small species from Long Bay, Tasmania. *Lingula exusta*, Moreton Bay. *Lingula tumidula*, and *Murphiana* occur in same locality, and are of the same colour. I often ask myself whether they are distinct species, or whether *Lingula tumidula* may not be a very wide variety of *Murphiana*. This is a point which Australian Zoologists must decide, as I have no opportunity of so doing, as there are only two specimens of the form *tumidula* in the British Museum; the form *Murphiana* is common, I have two or three specimens."

Mr. Davidson forgets to mention in his list to me *Megerlia* them to members to night. I append the dimensions of the various specimens numbering twelve rows in the series:—

No.	1.	Long.	3,	lat.	3¼,	No.	2.	Long.	2½,	lat.	2½	lines.
,,	3.	,,	2½,	,,	2¼,	,,	4.	,,	2,	,,	2	,,
,,	5.	,,	1¾,	,,	2,	,,	6.	,,	1½,	,,	1½	,,
,,	7.	,,	1¼,	,,	1½,	,,	8.	,,	1,	,,	1	,,
,,	9.	,,	1,	,,	¾,	,,	10.	,,	¾,	,,	1	,,
,,	11.	,,	¾,	,,	¾,	,,	12.	,,	½,	,,	½	,,

Specimens from Point Piper are Long. 4, lat. 4 lines.

NOTE SUPPLEMENTARY TO A PAPER ON THE AUSTRALIAN LEUCOSIIDÆ.

BY WILLIAM A. HASWELL, M.A., B.SC.

A recent excursion to Queensland has enabled me to add a few notes with respect to the occurrence of various species of brachyura of the family *Leucosiidæ* in Port Denison and neighbourhood. In all I observed eight species of this family in that locality, and of these two are now for the first time recorded as inhabitants of Australian seas.

1. LEUCOSIA PULCHERRIMA, Miers.

Leucosia pulcherrima, *Miers*, *Trans. Linn. Soc.*, 1877, p. 236, pl. 38, figs. 4—6.

Found by Alex. Morton, at low spring-tide on a sand-spit, Port Denison.

2. L.

Dredged in about two fathoms, in Gloucester Passage, Queensland.

3. MYRA AFFINIS, Bell.

Myra affinis, *Bell*, *Trans. Linn. Soc.*, Vol. 21, p. 296, pl. 32, fig. 2.

Large specimens of this species, having the carapace as much as an inch and a half in length, are to be found at low-water on sandy flats on the shores of Port Denison.

4. MYRA AUSTRALIS, Haswell.

Myra australis, *Haswell, l. c.*, p. 50, pl. 5, fig. 3.

Common at depths of a few fathoms in Port Denison.

5. PHLYXIA LAMBRIFORMIS, Bell.

Phlyxia lambriformis, *Bell, l. c.*, p. 309, pl. 34, fig. 1.

Dredged in 20 fathoms, off Holborn Island, Queensland.

6. NURSIA GRACILIS, Bell.

Dredged in 9 fathoms, Port Denison.

7. NURSILIA DENTATA, Bell.

In the first paper that I had the honor to submit to you I endeavoured to show that the two series of beds respectively named by me the Yass and Hume beds, were unquestionably upper Silurian.

I propose now to recapitulate the arguments I then used, and add a few other remarks. You have to night the advantage of having before you specimens of some of the rocks and fossils to which I shall refer.

Whatever progress has been made in learning the Geology of any particular country, it has been done by determining in the first instance the order in which life succeeded life in that part of the world, irrespective of what results may have been arrived at in other near or far distant lands.

Such was the task I set myself, with regard to the beds about Yass. This task I believe I have in some degree accomplished, examining the strata thoroughly inch by inch from the top to the bottom of the series.

The conclusion that I have arrived at is that the fossils of these beds correspond more nearly with those of the upper Silurian of England than with those of any other age.

I arrived at this conclusion from these beds containing in many parts such an abundance of *Trilobites* of exclusively Silurian Genera, without any admixture of *Trilobites* of exclusively Lower Silurian Genera.

I concluded also that at least one portion of the series was the equivalent to the lower portion of the Upper Silurian or Llandovery beds of Britain, (taking Sir Roderick Murchison's statement as my guide) from the presence of *Trilobites* of Upper and Lower Silurian genera, the number of *Peutameri*, including especially *Peutamerus oblongus*, the encrinital stems of Lower Silurian type, and the number of *Petraia*. One *Cheirurus* is undoubtedly the *Cheirurus insignis* described by Professor Koninck, and determined by him to belong to the horizon of the Llandovery beds.

The inclusively Silurian Genera referred to above are:

Cheirurus, *Calymene*.
Spherenochus. *Acidaspis*.
Encrinurus.

Professor Koninck's determination of some of the New South Wales Fossils tends to establish these beds to be Upper Silurian. Several fossils declared by him to be Silurian, are found in the Yass and Hume beds. While those which he has described as Devonian and referred to the neighbourhood of Yass, are only to be found in the Murrumbidgee beds, which occur some 8 or 9 miles from Yass, overlying uncomformably the Yass beds.

Occurring in the midst of these Silurian fossils is found what I believe to be undoubtedly a *Calceola* and also *Atrypa desquamata*. Now both these have only been found in other Countries in Devonian strata.

When Banaude found *Goniatites*, hitherto considered Devonian, depths. But there is evidence that they were laid down in shallow seas, during alternate sinking and rising of the land, sometimes in an open sea, and sometimes in salt-water lagoons, while some were evidently exposed during deposition, to the action of the sun and wind. This evidence is afforded by the nature of the rocks as well as by the mode of occurrence and condition of the fossils.

The depth required for the formation of shale, such as these beds contain, according to Dana, need not be more than a few hundred feet.

The compact Limestone and Coral conglomerates, are such as Dana describes as now forming in the Coral Islands, and would not be produced at depths exceeding 200 feet.

The grits with their ripple marks, and the bands of Limestone with sea-weed, all tell of shallow seas. The beds of unfossiliferous shale, some finely laminated, such as could only be formed in quiet water, and capable of retaining the slightest impression, together with the brackish springs flowing from them, afford evidence similar to that which eminent geologists have agreed to consider, as indicating that the beds so characterised, were deposited in salt-water lagoons only occasionally in communication with the ocean, rather than in an open sea. Dana has shown that such unfossiliferous deposits are now forming in some of the lagoons of the Coral Islands.

In the Yass beds especially, the mode of occurrence of the fossils, generally in layers, almost universally broken, worn, and sometimes so rolled as to be almost unrecognizable, show the stratum containing them was during its deposition subject to the action of the waves. Some of the fossils in the Hume beds exhibit a similar mode of occurrence, but in general in these latter beds the fossils are more evenly spread through the strata, and the perfect condition in which these are found show that they were deposited beyond the reach of tidal action.

The alternation of gritty and sandy beds with shale and limestone are sufficient evidence of the rising and falling of the land, though the period we are now considering must have been in this part one on the whole, of depression : must have been a general gain of the water upon the land. From the position of the Murrumbidgee beds further westward, this encroachment on the land must have continued long after the period of the Yass Silurian.

In conclusion I may remark that New South Wales has undoubtedly a Geological history of its own which if we are to learn, it must be from a systematic examination of the rocks in detail by Geological Survey, and not by adopting general conclusions arrived at in other countries, which seem to agree with random observations in this.

miles above Boggabri; being the first recorded case of these fossils being found on the eastern waters.

Also, a Mask which formed part of a Kite of peculiar construction and shape, 16 feet across, made by the Maories, and to which a special history belongs. And an elaborately carved box in which the Maories used to keep the feathers of the now extinct Moa. The above are the property of A. Macdonald Esq., of Pott's Point. Dr. Hector stated that it is reported, that a box similar to the above and actually containing Moa feathers was in the possession of a Chief on the upper Wanganui, and was highly prized by the Maories.

Mr. Brazier exhibited specimens of *Magasella Cumingi, Megerlia pulchella,* and *Terebratulina cancellata,* from Port Jackson; *Megerlia sanguinea* from Lifou; thirteen series of *Kraussia Lamarckiana* from Port Jackson; and two splendid specimens of *Cypræa spadicea,* (Gray,) from California.

Mr. Masters exhibited a *Doris,* retaining all its original color, preserved in glycerine with a little spirits of wine added.

Mr. Haswell showed six species of the Crabs described in his paper.

The Hon. William Macleay, F.L.S., exhibited a general collection of Silurian and Devonian Fossils from the neighbourhood of Yass.

Mr. W. J. Stephens, M.A., exhibited a large collection of *Trilobites* from the Yass beds.

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WEDNESDAY, OCTOBER 29TH, 1879.

The Vice-President, W. J. Stephens Esq., M.A., in the Chair.

DONATIONS.

From Baron F. von Mueller, K.C.M.G, "Eucalyptographia," decade 3, Melbourne, 1879.

From Dr. Julius von Haast, Geology of the Provinces of Canterbury and Westland, Christchurch, 1879.

Journal of the Royal Microscopical Society, Vol. 2, No. 5, London, 1879.

Mitthielungen aus der Zoologischen Station zu Neapel, Leipzig, 1879.

Eastern sea-board. The *Mugilidæ* are Acanthopteryginous Fishes of oblong form, with large scales, no lateral line, dentition feeble or none, two short dorsal fins, and the ventral fins abdominal. They are inhabitants of both fresh and salt water, some species almost exclusively the former, while others seem as exclusively to keep to the latter. It may be confidently said of nearly all of them however, that like the Salmon they take to the sea at certain seasons, unless accidently shut up in the rivers or lakes, and it is equally certain that at the spawning season they enter the harbours and estuaries of the coast in immense shoals, and push up the rivers and creeks to deposit their spawn. The period of their arrival in search of spawning grounds varies considerably, in each species, and to a certain extent in the individuals of the same species, but it is always at the commencement of the cold season here, (from the end of March to May,) and I believe I have good grounds for saying (as will be shown hereafter), that the ova do not germinate until the month of October.

The period at which the young Mullet leaves the rivers and mud-flats is not so easily determined, and I suspect that the analogy to the Salmon breaks down here. The fishermen to whom I have spoken on the subject, all declare that the movement of the shoals at the spawning season is simply out of one estuary into another, and that they are not, and never are, deep-sea Fishes. What makes this (the fishermen's view) the more likely is that at that season the Mullet is extremely fat, and it is scarcely possible that a fish which lives as Dr. Gunther informs us on the organic substances contained in the mud of rivers and creeks, sifted from the inorganic particles by the action of a pharyngeal apparatus, can improve so rapidly in condition in the open sea and a sandy or rocky bottom. I shall however have more to say on this subject, when I come to the description and history of the various species.

Dr. Gunther (Cat. Brit. Mus., Vol. III., p. 400.) divides the family into three genera:

Mugil—without teeth in the jaws.
Agonostoma—small teeth, lower jaw rounded.
Myxus—small teeth, lower jaw angular.

To these, Kner, in the Fishes of the Novara, page 276, has added the genus *Pseudomugil,* founded on a small fish of Port Jackson, which I have never seen, but it is certainly not properly one of the *Mugilidæ,* and I shall not therefore include it in the family.

MUGIL, Artedi.

This is the chief genus of the family, it is of world-wide distribution, of numerous species, and of high reputation as a food fish.

The following are the Australian species :—

A. Adipose eyelid, lips thin.

When "*the Mullet are in*" to use the expression of those who are on the watch for them, considerable activity is shown among the fishermen, but the benefit they derive from the bountiful profusion of these visitors is so limited, that I have known boat-loads of the finest fish thrown away, because they were not worth the trouble of conveying to market. Beyond the consumption of the fresh fish in the city, no means have yet been devised for utilizing this great food supply. The roes no doubt are eagerly bought up and salted, and a few of the fish themselves are salted and smoked, but the salting process is I think anything but a success.

The object of these migrations being the search for spawning grounds, the shoals after entering the harbour at once seem to search every creek and cranny for the suitable conditions. In this harbour no doubt the mud flats up the Parramatta River are the favourite spots for the deposition of the spawn, but the following note which I made a few days ago, would seem to indicate that almost any muddy beach will suit their purpose.

"On the 16th of October, 1879, large shoals of very small fish were seen alongside the boat jetty at Elizabeth Bay. Two of them were captured in a butterfly net by Mr. Masters. They proved to be the young of *Mugil grandis*, and were respectively 16 and 18 lines in length. As the time of spawning is never later than May, and as these fish could not have been more than a day or two old, the inference is that the spawn had remained in the mud near that spot during the winter, and until the increasing heat of spring had caused the ova to germinate."

Among the many and prolific breeding grounds of this Mullet, there is none more important than George's River, and if no other objections existed to the proposal of damming that river for the purpose of providing Sydney with water, the closing up of such an extent of the favourite spawning ground of this most valuable fish, would of itself, be a sufficient ground of objection.

This species of Mullet, as indeed is the case with all fishes, loses very rapidly its excellence after the spawning season is over, they are indeed still fat, but the delicacy and freshness are gone, and they quickly contract an oily and muddy taste. In this state they are often brought to the market throughout the winter, but they are not to be compared with the same fish when it first comes in to spawn; in fact they are then as disagreeable as they were formerly delicious. The date at which these fish return to the sea, if they do so at all, is very doubtful, the favourite theory has been that in this respect they resemble the Salmon, but as I mentioned a few pages back, the evidence of the fishermen generally points to a very different conclusion, and the feeding habits of the Mullet are such as to strengthen the evidence in favour of their views. The Mullets generally, according to their observation, accumulate at the spawning season in large shoals from the rivers, creeks, mud flats, and lakes in which they had lain during the winter and early part of summer. Acting upon

"The height of the body equals the length of the head and is one-fifth of the total. The young specimen has the body somewhat more slender. The least depth of the tail is two-fifths of the length of the head. The lower profile of the head is rather more convex than the upper; the greatest depth of the head, above the posterior margin of the operculum, is three quarters of its length; the interorbital space is slightly convex, and contained twice and a third in the length of the head. The snout is broad, moderately depressed, and longer than the eye; lips thin; the maxillary is a little longer than the intermaxillary, and becomes just visible behind the angle of the mouth; the preorbital is not emarginate and is minutely denticulated at its anterior edge and at its extremity, which is obliquely truncated. The cleft of the mouth is one-fourth broader than it is deep; the margins of the mandibulary bones form an acute angle anteriorly; the space at the chin, between the mandibles and interopercles, is elongate-lanceolate. Both lips are provided with a series of minute ciliæ. There is a deep cavity in front of the vomer. The nostrils are distant from each other, and the posterior is somewhat nearer to the orbit than to the anterior. The eye is surrounded by a broad adipose membrane, nearly entirely covering the iris. There are three series of somewhat deciduous scales between the eye and the præopercular margin; the angle of the præoperculum is rather produced posteriorly; there are three pores on its inferior margin and two on its posterior. The pectoral fin is inserted somewhat above the middle of the body, and extends to the tenth scale of the lateral line; it is shorter than the head (the snout not included); the root of the ventral is midway between the base of the pectoral and dorsal. There are 22 or 24 scales between the snout and the spinous dorsal. The origin of the latter corresponds to the twelfth scale of the lateral line, and is exactly in the middle between snout and base of the caudal; the length of the first spine is one half, or a little more than one half, of that of the head. The distance between the origins of the two dorsal fins is nearly equal to the length of the head. The soft dorsal is considerably higher than long, as high as the spinous, and has the upper edge slightly emarginate; a few scales cover the anterior rays. Caudal forked. The anal commences a litttle before the opposite dorsal fin, is higher than long, and rather higher and not more scaly, than the dorsal. Pointed scales of moderate length in the axil of the first dorsal, of the pectoral, and of the ventral. Colour greenish shining golden; fins minutely dotted with blackish."

Dr. Gunther mentions specimens of this fish in the British Museum from Australia, and Aneiteum, and Count Castelnau points out its indentity with the well-known "*Hard-gut Mullet*" of the Sydney fisherman.

It is a much smaller fish than *M. grandis*, but equally good, and equally abundant in the spawning season. The shoals generally make their appearance before those of *M. grandis*, and penetrate higher up the rivers into fresh water.

concentrically striated, those of the trunk more regularly ctenoid. The spur scale of the dorsal reaches beyond the end of the fin, that of the pectorals measures two-fifths of the length of the fin. All examples show a large bluish warty spot at the base of the pectorals, and many alternate clear and clouded stripes along the scale rows. Length 3—11″. From Java, Manilla, and New Holland.

D. 4. 1/8. A. 3/8. L. lat. 39-40.

I have never seen this fish, but Kner, who is an accurate observer and an acknowledged authority, announces it as a Port Jackson fish in his work on the Fishes of the Novara Expedition, and there is no reason to suppose that he is wrong. We may conclude however that it is not a common fish, and therefore cannot be reckoned among the useful species.

4. Mugil argenteus, Gunth.

Cat. Brit. Mus. III, p. 424, Journ. Mus. Godef.

D. 4. 1/8. A. 3/9. L. lat. 28. L. transv. 10.

"The height of the body is contained four-times in the total length, the length of the head four-times and two-thirds, the caudal fin nearly five-times. An adipose membrane covers one-half of the iris anteriorly and posteriorly. The upper profile is strongly arched. The interorbital space is flat, and its width is two-fifths or the length of the head. The snout is rather broad, shorter than the eye, the upper lip being moderately thick, truncated, and forming its front margin. The anterior margins of the two mandibulary bones form an obtuse angle, and the cleft of the mouth is thrice as broad as it is deep. The free space at the chin, between the mandibles is narrow, elongate, lanceolate; the maxillary is entirely hidden; the præorbital with a notch anteriorly, and with the extremity truncated. There are eighteen scales between the snout and the dorsal. The pectoral is as long as the head, the length of the snout not included, and extends to the ninth scale of the lateral line; it is inserted somewhat above the middle of the depth of the body, and has no elongate scale in its axil. The spinous dorsal commences nearer to the tail than to the extremity of the snout above the tenth scale of the lateral line. The second dorsal commences above the twentieth scale, or above the middle of the anal fin; both fins are scaleless. Dorsal and anal fins of equal height, much lower than the tail between them; caudal emarginate, black-edged."

Dr. Gunther gives, in his Catalogue, from which the above description is copied, Port Jackson and South Australia as the habitat of this species, but in a subsequent mention of the same fish in his work on the Fishes of the South Sea, published in the Journal of the Godeffrey Museum, he mentions, the Fitzroy River near Rockhampton, as another locality. I have never, to my knowledge, seen a specimen of the fish.

5. MUGIL OCCIDENTALIS, Casteln.

the head is covered with scales of large size, but these become very minute towards the lips; the longitudinal line has forty large scales, and three or four smaller ones near the caudal. From the transverse line that would pass over the centre of the eye to the root of the dorsal there are twenty scales; the body is very high, and its lower profile very convexed; the scales number fifteen on the transverse line; they are plain, rather rugose, with a short ridge that does not extend to the root, neither to the margin; the first dorsal is placed at equal distance from the extremity of the snout and the upper base of the caudal fin; it is formed of four spines; the first of which is the longest, and is equal to the space between the eyes; the second dorsal is placed behind the root of the first at a distance rather less than the length of the head; it is formed of a spine and eight rays; the first is not longer, of one half of the height of the first ray; the last is prolongated and pointed; there are a few very minute scales between the rays; the caudal is strongly forked; it is scaly and formed of fourteen long rays; the anal is opposite to the second dorsal, and has the same form; it has three spines and eight rays; the ventrals are inserted at equal distance from the base of the pectorals and the first dorsal; the pectorals are short, broad and scaly; their length is contained one and a-half in the head; they are very far from attaining the vertical from the first dorsal, and their extremity only covers the base of the tenth scale of the longitudinal line; they have fifteen rays. The eleventh and twenty-third transverse lines of scales originate at the root of the first and second dorsal; there is a very large pectoral scale.

The fish seems to have been silvery with the upper parts of an obscured grey; the longitudinal lines are well marked on the specimens preserved in liquor; there is a large golden blotch behind the eye; the length of my specimens, which are said by Mr. Bostock to be of the average size, are about twelve inches; but a dried one he also sent me is fourteen. This sort inhabits the rivers of Western Australia, all the year round, and is a good edible fish."

B. No adipose eyelid.

6. Mugil Waigiensis, Quoy and Gaim.

Gunth. Cat. Brit. Mus., Vol III., p. 435.

D. 4. 1/7. A. 3/8. L. lat. 26—27. L. transv. 9. Cæc. pylor. 10. Vert. 11/13.

The height of the body is contained four-time and a-fourth to four-times and three-fourths in the total length, the length of the head four-times and a-half. Head broad, flat above, the width of the interorbital space being one-half of the length of the head. Snout short, broad, depressed and obtuse. Lips thin, the angle made by the anterior margins of the mandibulary bones is very obtuse. The free space at the chin, between the mandibles, is broadly lanceolate. The inferior extremity of the maxillary is

7. Mugil Peronii, Cuv. and Val.

Gunth. Cat. Brit. Mus., Vol. III., p. 452. Casteln. Proc. Linn. Soc., N.S. Wales, Vol. III., p.

D. 4. 1/9. A. 3/10. L. lat. 41. Cæc. pylor. 2.

Upper profile straight, snout longer than the eye, maxillary not entirely hidden by the præorbital; no adipose eyelid, no pointed scale in pectoral axil, caudal compressed, very high and very strongly emarginate; body compressed, its greatest height being behind the centre. Colour very silvery; back black, with a blue tinge, fins dark, a bright golden spot on the opercle in front of the pectorals, and another behind the eye.

This species was originally described by Valenciennes as coming from the North West Coast of New Holland. This would appear to be a mistake. Count Castelnau points out in the Proc. Zool. and Acclim. Soc., of Victoria, Vol. II., p. 151, that the locality from which the specimen named *Peronii* by Valenciennes came, was Western Port in Victoria. It is not however found in great numbers in that colony. In Port Jackson it is known as the *Flat-tail Mullet*. Like *M. grandis* and *dobula*, it is very plentiful at spawning time, which I am told is rather later than that of the others. It is a very fine fish, averaging about a foot in length. The broad high tail, and the eye without adipose lid, make this species readily recognizable from any of the others found in Port Jackson

8. Mugil compressus, Gunth.

Cat. Brit. Mus., Vol., III., p. 451.

D. 4. 1/8. A. 3/9. L. lat. 28. L. transv. 10.

"Adipose eyelid none; upper lip rather thin; the greatest depth of the body is below the spinous dorsal, where it is contained four-times and two-thirds in the total length. The extremity of the maxillary is conspicuous behind and below the angle of the mouth. The two anterior dorsal spines of nearly equal length and strength."

Of this fish Dr. Gunther only says, "Habitat, New South Wales; a specimen one foot long, presented by the Medical Officers R. A." I have never seen anything like it from any part of New South Wales, but I have identified a Mullet I received some months ago from Port Darwin as this species.

9. Mugil Pettardi, Casteln.

Researches on the Fishes of Australia, p. 32.

D. 4. 1/8. A. 3/9. L. lat. 46.

"No adipose eyelid, snout tapering, height of body four-times in the total length, and more than the length of the head. Anterior dorsal spines very strong. Caudal fin very large, with the lobes elongate." Named by Count Castelnau after Mr. Pettard

I now come to two species placed by their respective authors in the genus *Mugil*, but which appear to me to differ considerably in appearance from all others of the genus, though possibly they would not fit well into the following genus *Agonostoma*. One of them is thus described by Count Castelnau:

11. MUGIL VENTRICOSUS, Casteln.

Researches on the Fishes of Australia, p. 32.

"Adipose eyelid not developed; upper lip not particularly thick; anal fin with eight soft rays, lateral line with twenty-nine scales. These characters would only allow this species to be placed with *Waigiensis*, but it is very distinct by its form, &c. Height of the body contained rather less than three times and a-half in the total length of the fish; the head is three times and a-quarter in the same; the general form of the body is oval and compressed; the upper profile regularly curved, and the lower one inflated on the belly; head broad, rather flat above; the interorbital space is contained twice and a-half in the length of the head; this is rather pointed, seen laterally the angle made by the anterior margins of the mandibulary bones is very obtuse and emarginated in front; mandibules finely striated; the free space at the chin broadly lanceolate; teeth very visible and numerous at the upper jaw, the lower one rather crenulated on its edge; eye rather large contained three times and a-half in the length of the head; the anterior dorsal spine is large, and only contained once and a-half in the length of the head; the pectorals are contained once and one-third in the same, and are inserted above the middle of the depth of the body; the ventrals are situated much nearer to the perpendicular of the base of the pectorals than to the one of the first dorsal; the anal commences a little in advance of the opposite dorsal fin, and both are scaly; the least depth of the tail is contained twice and a-half in the length of the head, or twice and two-thirds in the thickest part of the body; the colour after having been in the liquor, is uniform silvery, with the upper part bluish; the fins yellow. Two specimens about three and a-half inches long. Nicol Bay, Western Australia.

NOTA.—The position of the teeth would place this fish with *Agonostoma*, but it is so absolutely similar to some species of *Mugil* as to make me unwilling to put it in any other genus, the more so as the cleft of the mouth agrees with *Mugil*, and not with *Agonostoma*. I doubt very much also if this latter genus will be maintained, as I think other sorts will form passages between the two."

12. MUGIL CRENIDENS, Kner.

Voy. Nov. Fische, p. 229, pl. 9, fig. 6.

D. 4. 1/8. A. 3/9. L. lat. 43—44. L. trans. 12—13. Ap. pyl. 2.

" Dentes crenati uniseriales intermaxillares, ciliati pluriseriales in ambitu maxillæ inferioris, vomer, os palatina, pterygoidea et

13. AGONOSTOMA DIEMENSIS, Richardson.

Erebus and Terror, Fishes, p. 37, pl. 26, fig. 1 and 2. Casteln., Proc. Zool. and Accl. Soc., Victoria, Vol. 1, p. 161.

D. 4/10. A. 3/12. C. 14. 5/4. P. 15.

Upper parts greyish-blue with green tinges on the body, and brown on the head; the lower parts of the body are silvery, the upper and pectoral fins are light grey, the caudal is yellow bordered posteriorly with black, the anal white; there are very fine longitudinal lines on the sides; eyes gilt. Count Castelnau states "*loc. cit.*" that this fish is very common at Port Phillip all the year round, that it is called the "*Mullet*" there, and that it rarely exceeds 12 or 13 inches in length. He points out also that Dr. Gunther had made a mistake in referring this species to *Agonostoma Forsteri*, a distinct New Zealand fish. This species is also common in Western Australia.

14. AGONOSTOMA LACUSTRIS, Casteln.

Proc. Zool. and Acclim. Soc., Victoria, Vol. 1, p. 142.

D. 4/9. A. 3/12. L. lat. 62. L. transv. 16.

Head not so pointed as in the last species; height five and a-half times in the total length, head five times in the same; orbit four and a-half times in the length of the head. The two first spines of the dorsal are joined at the base; the caudal is strongly emarginate with the lobes pointed. Colour greyish-green on the upper parts, white on the lower; each scale with an obscure margin, a reddish spot on the head; the upper part of the head and lips of a dark violet colour; fins greyish, caudal with a black posterior margin, eyes of a very bright orange.

This fish is known as the *Lake Mullet*, and is brought to the Melbourne market from the Gipps Land Lakes. It is scarce.

In my paper on the fishes of Port Darwin, (Proc. Linn. Soc., Vol. 2, p. 360, pl. ix., fig. 8.) I described a fish under the name of *Agonostoma Darwiniense*. It is an *Eleotris* and not an *Agonostoma*.

Genus MYXUS, Gunth.

Small teeth in the upper jaw, sometimes also on the lower, anterior margin of the mandibles sharp.

15. Myxus elongatus, Gunth.

Cat. Brit. Mus., Vol. III., p. 466. Kner., Voy. Novara, p. 230.

D. 4. 1/8. A. 3/9. L. lat. 45. L. transv. 13.

"A single series of fine teeth in the upper jaw, none in the lower; vomer with a narrow cross band of teeth; sometimes a very small patch anteriorly on the palatine bones. Lips thin; præorbital serrated anteriorly and inferiorly. The anterior dorsal spine slender, its length being rather more than one-half of that of the head. Eleven inches long."

Hab. Hobson's Bay and Port Jackson.

To the above description of Dr. Gunther's I may add that the with a more bountiful natural supply than any, or all of these countries, there is not a single exhibit of fish of any kind. It is no doubt overstepping the bounds of a Scientific Paper, entering at any length into questions of an economic character, but if by means of the publicity given to the papers read in this Society, I am enabled to call public attention to this all important subject, I am sure the Society will not grudge me the opportunity.

I do not propose however, to do more than point out that the development of our fisheries is of such vast importance in a national point of view, that it might well, here, as has been the case in nearly all other countries, form a subject for the serious attention of the Government. I do not mean that the Government should become fishermen or fishmongers, but that it should use the means, readily at its disposal, to bring together all information, which we are now so defective in, as to the haunts, habits, uses, &c., of the fishes of our Coast. For this purpose, I think a Commission should be appointed, whose duty it would be to enquire into, and report upon everything connected with our fish supply, on fish culture, on the methods to be employed in catching the various fishes, on the best modes of preparing them for the market, and on the best means of protecting valuable kinds from unprofitable destruction, either by their human or their natural enemies. Such an enquiry properly conducted, would necessarily be productive of much good in accumulating information of a reliable character upon subjects admittedly of National importance even though the results on the development of our fisheries might not be immediately apparent.

TROPICAL MOLLUSCA RECENTLY DREDGED AT PORT JACKSON HEADS.

BY J. BRAZIER, C.M.Z.S., C. M. R. S. TAS.

1. TYPHIS ARCUATUS.

Typhis arcuatus, Hinds, Proc. Zool. Soc., 1843, p. 19.

„ *Japonica*, A. Ad., Proc. Zool. Soc., 1862, p. 374.

„ *arcuatus*, Sowerby, Thes. Conch., Vol. III., p. 320, pl. 384, f. 3, 4, 5.

„ *arcuatus*, Tenison-Woods, Papers and Proceedings Royal Society Tasmania, 1876, p. 132.

Hab. "Sow and Pigs' Reef," three fathoms. Outer North Head of Port Jackson near the rocks, five fathoms, sand and shells —*(Brazier)*. Cape of Good Hope. Dredged on the L'Agulhas Bank, in from forty to fifty-four fathoms, *(Hinds)*.

Long Bay, Bruny Island, Tasmania, ten fathoms, sand, *(Rev. H. D. Atkinson)*. Japan, *(A. Adams)*.

3. Mitra Pacifica.

Mitra Pacifica, Reeve, Proc. Zool. Soc., 1845, p. 52.

Mitra Pacifica, Sowerby, Thes. Conch., parts xxxi.—xxxii., pl. 359, fig. 388.

Hab. Outer North Head of Port Jackson, five fathoms, sand, stones, and broken shells, *(Brazier)*. Lord Hood's Island *(Cuming)*.

The single specimen obtained on our coast is very much sea-worn, it agrees well with fine living specimens that I have seen from other Pacific Islands, it need never be confounded with *Mitra exasperata*, Chem., allthough they approach near to one another.

4. Senectus squamosus.

Turbo squamosus, Gray, Voyage of H.M.S. 'Fly,' 1847, Vol. II. p. 359, pl. 2, fig. 8.

,, *laminiferus*, Reeve, Proc. Zool. Soc., 1848, p. 49. Conch. Icon., pl. 4, sp. 17.

,, *foliaceus*, Homb. et Jacq., Voy. Au. Pole Sud., de l'Astrolabe et la Zélée, 1854, Tome V., p. 60, Atlas pl. 14, fig. 34, 37.

Hab. Outer North Head of Port Jackson, ten fathoms near the rocks, *(Brazier)*.

The home of this species is Torres Straits, during the Chevert Expedition it was found very common at Dungeness Island. Mr. E. Spalding obtained it also at Port Darwin and Port Essington. The specimen I obtained at the Heads is dead but in splendid condition.

5. Buccinulus coccinatus.

Tornatella coccinata, Reeve, Proc. Zool. Soc., 1842, p. 60.

Solidula coccinata, A. Adams, Proc. Zool. Soc., 1854, p. 61.

Buccinulus coccinatus, Brazier, English Journal of Conch., 1879, Vol. II., p. 198.

Hab. Inner North Head of Port Jackson, five fathoms, sand and broken shells, *(Brazier)*. Mindanao, Philippines, twenty-five fathoms, sandy mud, *(Cuming.)* Nouméa, New Caledonia, eight fathoms, sandy mud, *(Brazier)*. Isle Amede, New Caledonia, deep water, *(Monsieur Fabre)*. Fitzroy Island, North-east Australia, found on the sands. Whale Island, Aneiteum, New Hebrides, found on sandy mud-flats, *(Brazier)*.

I have been very lucky in dredging ten specimens, my first haul was three dead ones, and on my second visit I secured seven splendid living examples, the largest measured eleven lines long, others from nine, eight, six, and the smallest five lines long. During the Chevert Expedition, it was not found at any of our dredging stations.

6. TELLINA STRIATULA.

Tellina striatula, Lam., Anim. San. Vert., 2 ed., Tome VI., p. 201.

The living specimen dredged at Sydney Heads is only five lines long, those from New Caledonia are very fine and found in great variety, both in deep water and on sandy mud-flats at low water.

NOTE ON ONISCIA PONDEROSA, WITH ITS LOCALITY.

BY J. BRAZIER, C.M.Z.S., ETC.

ONISCIA PONDEROSA.

Oniscia ponderosa, Hanley, Proc. Zool. Soc., 1858, p. 255, pl. xlii., fig. 9—10.

Hab. Penirihonen, north coast of New Caledonia, (*R. C. Rossiter*).

When it was described by Mr. Hanley the locality of this very rare and beautiful species was unknown. The specimen before me I consider the grandest of the genus, and it is the first found in Australian Seas; much remains to be done in New Caledonia with the dredge.

ON THE AUSTRALIAN BRACHYURA OXYRHYNCHA.

BY WILLIAM A. HASWELL, M.A., B.Sc.

[Plates 25—27.]

Descriptions of several species of Australian Maioid Brachyura occur in the works of Milne-Edwards, and the earlier writers on the subject, and a few have more recently been described by Dana, Streets, A. Milne-Edwards, Hess and Miers. These amount in all to nineteen species, belonging to thirteen genera. I have now to add thirty-seven species (of which seventeen appear to be new to science), thus bringing up the total number to fifty-six species, belonging to twenty-seven different genera. The greater number of the new species are contained in the fine collection obtained by the Hon. William Macleay on the eastern coast and in Torres Straits; the remainder are in the collection of the Australian Museum, or were obtained by myself at Port Denison.

The arrangement followed is the modification of Prof. Dana's classification of the group proposed by Mr. E. J. Miers.*

FAM. I. *INACHIDÆ.*

Genus STENORHYNCHUS, Lamarck.

1. Stenorhynchus curvirostris, *A. Milne-Edwards.*

Stenorhynchus curvirostris, *A. Milne-Edwards, Journal des Museum, Godeffroy,* Band i, Hft. iv.. p. 75.

Hab. Bass' Straits, (Godeffroy Museum).

2. Stenorhynchus brevirostris, mihi. Plate xxvii. fig. 5.

Stenorhynchus brevirostris, *Haswell, Proc. Linn. Soc., N.S.W.,* vol. iii., p. 408.

Hab. Port Jackson, Port Denison.

superior and inferior borders, the inner surface smooth, the outer surface obscurely tuberculated towards the middle.

Hab. Auckland (Macleay Museum); Port Jackson (Australian Museum).

Genus Achæus, Leach.

4. Achæus breviceps, *sp. nov.*

Female. Carapace smooth, hairy at the sides; regions well-defined; cardiac region prominent; a low angular elevation on the hepatic region. Rostrum very short. Frontal region very short, with a well-marked mesial furrow. Eye peduncles rather long, as long as the front. Arm trigonal; wrist smooth, rounded; palm compressed and longitudinally ridged; fingers as long as the palm, slightly incurved, acute, toothed, meeting throughout the entire length of their inner edges. Second pair of limbs three times as long as the post-frontal region of the carapace; dactylos filiform. Following pairs of limbs decreasing in length backwards; dactyli falciform. Length ¼ in.

Hab. Port Jackson.

Genus Camposcia, Latr.

5. Camposcia retusa, *Latr.*

Camposcia retusa, *Latr. R. An.* 2e éd., t. iv., p. 60; *Gnérin, Icon. Crust.*, pl. ix., fig. 1; *Milne-Edw., Hist. Nat. Crust.*, tome i., p. 283, pl. xv., figs. 15, 16; *A. Milne-Edwards, Nouv. Arch. du Mus.*, t. viii., p. 255, (1872).

Hab. Seas of Asia; New Caledonia (Paris Museum); Cape Grenville ("Chevert" Exped.); Port Denison (Australian Museum).

Genus Oncinopus, De Haan.

6. Oncinopus angulatus, *sp. nov.*

Carapace triangular, much depressed behind. Gastric region elevated; cardiac region slightly elevated in the centre, with two rounded tubercles; hepatic regions with a rounded transverse ridge. Front deeply incised. Lateral border with a low angular elevation behind the eye. Anterior limbs slightly longer than the carapace; hand dilated in the male; second pair of legs about twice as long as the carapace, the meros, carpus and propodos stout; posterior legs more slender than the second pair, about one and a-half times the length of the carapace. Length three-fifths of an inch.

Hab. Port Jackson (very common); Cape Grenville ("Chevert" Exped.)

This species differs from its very near ally *O. neptunus* of Adams and White, which it closely resembles in the form and proportions of the limbs, chiefly in having the front rather less deeply incised, and in the presence of a slight projection on the lateral border of the carapace.

Genus HALIMUS, Latr.

9. Halimus lævis, *sp. nov.* ?

Carapace nearly smooth above; five tubercles on the gastric region; no spine on the posterior margin; lateral spines similarly placed to those of *H. spinosus* but smaller—the last almost obsolete. Basal joint of the antennæ with a sharp tooth at its antero-internal angle and a spine at its antero-external angle. Anterior limbs (in the male) very large; arm with a conical tooth at the distal end of its upper surface, and three or four smaller ones further back; wrist very strongly carinated; hand very large, swollen, smooth, with two or three very small fasciculi of hairs; fingers acute, meeting only at their tips when closed, leaving a large interval. Posterior limbs with the penultimate joint compressed, but not truncate as in *H. spinosus.*

Hab. Tasmania, King George's Sound, W. Australia.

This species differs from *H. aries* and *H. spinosus* in wanting the spine on the posterior border of the carapace, and from *H. auritus* probably in the large size of the anterior limbs in the male. From *H. tumidus* it differs in the absence of the spines on the outer border of the basal joint of the antennæ.

10. Microhalimus deflexifrons, *sub-gen. et sp. nov.* Plate xxv. fig. 2.

Carapace sub-triangular, nearly smooth, the lateral margins with three very minute spines on the hepatic regions, three others on the branchials, a similar minute point towards the middle of the latter region, and another in the middle of the posterior border. Gastric region very prominent, two small tubercles in front opposite the eyes; three rounded tubercles on the cardiac region. Rostrum obliquely deflexed, of two slender, acute, divergent cornua. Orbits not well-defined, with two spines behind the eye—the anterior very small, occupying the posterior angle of the upper orbital border, the posterior much larger than the anterior and separated from it by a considerable interval. Basal joint of the external antennæ enlarged, about twice as long as broad, armed with an acute spine, directed forwards and outwards, at its antero-external angle, the proximal joints of the flagellum rather stout, and inserted underneath the outer border of the rostrum so as to be partially visible from above. External maxillipedes with the third joint slightly produced and auriculated at its external angle. Anterior limbs, in the female, with the arm and wrist finely tuberculated, the latter non-carinate, the hand narrow, compressed, smooth, the fingers slender, acute; in the male larger than in the female, with the wrist not tuberculated, provided with a strong denticulated longitudinal carina on the outer surface, the hand much larger than in the female, and the fingers stouter, the immovable finger being armed with a stout tooth. Ambulatory legs of moderate length, decreasing in length posteriorly, the penultimate joint very slightly dilated and compressed, the terminal joint falciform. The carapace and ambulatory limbs covered with hooked hairs which are stiffer above the orbits, on the rostrum and on the penultimate joints of

12. Xenocarcinus depressus, *Miers.*

Xenocarcinus depressus, *Miers, Crust. Erebus and Terror*, p. 1.

Hab. Cape Howe (Brit. Mus.)

Genus HUENIA, De Haan.

13. Huenia bifurcata, Streets.

Huenia bifurcata, *Streets, Proc. Acad. Nat. Sci. Philad.*, 1870, p. 107, *E. J. Miers, Catal. Crust. N. Z.*, p. 3.

Hab. New Zealand (Mus. Philad. Acad.); Port Jackson (Macleay Museum; Australian Museum).

14. Huenia proteus, *De Haan.*

Huenia proteus, *De Haan, Crust. Japan*, p. 95, pl. xxiii., figs. 4—6; *Adams and White, Voyage of H.M.S. "Samarang," Crustacea*, p. 31, pl. iv., figs. 4—7.

Hab. Japan (De Haan); Mindanao; China (H. M. S. "Samarang"); Palm Islands and Percy Islands ("Chevert" Expedition).

Genus MENÆTHUIS, Milne-Edwards.

15. Menæthuis monoceros, *Latr.* (*sp.*)

Pisa monoceros, *Latr., Encycl.* t. x., p. 139.

Menæthuis subserratus, *Adams and White, Voy. of H. M. S. "Samarang," Crust.* p. 18, pl. iv., figs. 1 and 2.

Menæthius monoceros, *A. Milne-Edwards, Nouv. Arch. du Mus.*, t. vii. p. 252.

Hab. Red Sea, Philippines, etc.; Port Denison, Queensland.

I have followed Dr. A. Milne-Edwards in combining *M. subserratus*, Adams and White, with *M. monoceros*, Latreille.

16. Gonatorhynchus tumidus, (*gen. et sp. nov.*) Pl. xxv. fig. 4.

Carapace sub-triangular, rounded behind; surface finely granulated, covered with hooked hairs which are much closer on the rostrum and over the orbit; gastric region with a few irregular, smooth tubercles; hepatic regions prominent, with a few small, pointed tubercles; anterior portion of the cardiac region rounded, separated, together with the urogastric region, from the branchial by a broad, low, sinuous ridge which broadens out anteriorly to form a smooth, pear-shaped elevation on the inner part of the branchial region, and breaks up behind into a number of small rugæ; branchial regions dilated, each with two ovate flattened tubercles situated close together towards the centre, and three spinous tubercles towards the lateral margin. Rostrum slightly deflexed; cornua triangular, pointed, slightly divergent. Eyes non-retractile; orbits incomplete, the upper orbital border ending behind in a minute acute tooth, and followed by two convergent spines separated by open fissures. Epistome short. Basal joint of the external antennæ about twice as long as broad, concave from side to side, with a thin outer lip, slightly notched in front, more prominent behind, forming the lower rim of the orbit; a small tooth at the antero-internal angle. External maxillipedes with the third joint produced and rounded at its antero-external

17. Egeria arachnoïdes, *Rumph.* (*sp.*)

Cancer arachnoïdes, *Rumph.*, pl. viii., fig. 4; Inachus longipes, *Fab. Supp.* p. 358; *Macropus longipes*, Latr., *Hist. Nat. des Crust.*, t. vi., p. 111; Egeria arachnoïdes, *Latr.*, *Encyc.* pl. 281, fig. 1; Leptopus longipes, *Lamarck*, *Hist. des Anim. s. vert.*, t. v., p. 235; *Latr. Régne Anim.*, 2e. ed., t. iv., p. 62; Egeria arachnoïdes, *Milne-Edwards*, *Hist. nat. Crust.*, tome i., p. 291.

Hab. Coast of Coromandel (Milne-Edwards); Darnley Island, Torres Straits (Chevert Exped.)

18. Egeria Herbstii ? *Milne-Edwards.*

Cancer longipes, *Herbst*, pl. 16, fig. 93; Leptopus longipes, *Guérin*, *Iconog. Cr.*, pl. 10, fig. 3; Egeria Herbstii, *Milne-Edwards*, *Crust*, tome i., p. 292; Egeria longipes, *Adams and White*, *Crust. "Samarang,"* p. 7.

Hab. Seas of Asia (Milne-Edwards); Phillipines (Adams and White); Torres Straits ("Chevert" Exped.); Port Denison (Mr. Alex. Morton).

The specimens which I refer doubtfully to the above species, belong to a species common on the coast of tropical Australia. They differ from Guérin's figure of *Leptopus longipes* in having the ordits widely open above, and the eyes very large and thick, in the less orbicular form of the carapace, and the presence of spines at the distal extremity of the third joint of the ambulatory legs.

Genus MICROPISA, Stimpson.

19. Micropisa crassipes, *A. Milne-Edwards.*

Micropisa crassipes, *A. Milne-Edwards*, *Journal des Museum Godeffroy*, Band i., Heft. iv., p. 78.

Hab. New Holland (Museum Godeffroy).

Genus CHLOROLIBINIA, Lockington.

20. Chlorolibinia gracilipes, *Miers.*

Chlorolibinia gracilipes, *Miers*, *Ann. and Mag. N. H.* (5) 19, p. 7, pl. iv., fig. 4.

Hab. Papua (H.M.S. "Herald"); Cape Grenville ("Chevert" Expedition).

Genus PARAMITHRAX, Milne-Edwards.

Sub-genus PARAMITHRAX, Miers.

21. Paramithrax peronii, *Milne-Edwards.*

Paramithrax peronii, *M.-Edw., Hist. Nat. Crust.*, t. i., p. 324; *Jacquinot et Lucas, Voy. au Pole Sud., Zoology*, iii., *Crust.* p. 10, pl. 1, fig. 3 (1853); *Miers, Cat. Crust. N. Z.*, p. 5 (1876).

Hab. Indian Ocean, Akaroa (N. Z.) (Hombron et Jacquinot); Australia, (Brit. Mus.)

22. Paramithrax sternocostulatus, *A. Milne-Eowards.*

Paramithrax gaimardii, Miers, Cat. Crust. N.Z., p. 6, (1876).

Hab. New Zealand (Brit. Mus.); Port Jackson (common).

25. Leptomithrax spinulosus, *sp. nov.* Plate xxv., fig. 3.

Carapace much longer than broad, covered with short spinules and curled hairs. Lateral margins with eight pointed spines, the first two close together, separated by a wide interval from the third. Posterior border with two short spines. Rostrum of two acute, divergent spines, the points slightly bent outwards. Post-ocular spine acute, with two accessory spinules on its posterior margin. Basal joint of the antennæ ending in two very long pointed spines, the inner one inclined downwards, forwards and slightly outwards, the outer forwards, outwards and slightly upwards, a row of tubercles on its outer border and two or three on its inner. Anterior limbs equal in length to the carapace and rostrum, arm covered with short spinules above, with two rather longer spines, one on the distal end, the other towards the middle; wrist covered with small tubercles, hand compressed, smooth; fingers acute, smooth, nearly straight. Ambulatory legs and under surface of body covered with a short, close pubescence, the former in addition with a row of fasciculi of curled hairs on the third, fourth, and fifth joints. Length two and three-quarter inches; breadth two inches.

Hab. Tasmania, (Australian Museum, collected by Mr. Kendal Broadbent).

A large specimen from King George's Sound, in Mr. Macleay's collection, differs from the Tasmanian species above described mainly in having the spines on the carapace all shorter and blunter and the anterior limbs very large, with the hand much dilated, and the fingers meeting only at the tips when closed.

Genus CYCLOMAIA, Stimpson.

26. Cyclomaia margaritata, *A. Milne-Edwards.*

Cyclomaia margaritata, *A. Milne-Edwards, Nouv. Arch. du Mus.*, t. viii., p. 236, pl. x., figs. 2 and 3 (1872).

Hab. New Caledonia; Sandwich and Viti Islds. (Paris Museum); Abrolhos, Western Australia (Macleay Museum).

Genus Hyastenus, White.

27. Hyastenus diacanthus, *De Haan.* (*sp.*)

Pisa (Naxia) diacantha, *De Haan*, *Crust. Jap.*, p. 86, pl. xxiv., fig. 1 (1839); Hyastenus diacanthus, *A. Milne-Edwards*, *Nouv. Arch. du Mus.*, t. viii., p. 250; *Miers*, *Cat. Crust. N. Z.*, p. 9 (1876). Hyastenus verreauxii. *A. Milne-Edwards*, *Nouv. Arch. du Mus.*, t. viii., p. 250.

Hab. Japan (De Haan); New Zealand (Brit. Mus.); Port Jackson; Port Denison; Port Darwin; Torres Straits.

This species varies to a remarkable extent in the length and degree of divergence of the rostral cornua, and the length of the second pair of legs. The specimens from Port Denison are much smaller than those from Port Jackson and have the rostral cornua relatively shorter and stouter; those from Torres Straits are still smaller (7 lines in length) and have the surface of the carapace (in the dried condition) smooth and pearly.

28. Hyastenus oryx, *A. Milne-Edwards.*

curved supra-orbital spine. Basal joint of the antennæ with a spine at its antero-external angle. First pair of legs slender, as long as the carapace; second pair more than twice as long as the first; following pairs shorter than the second.

This genus is nearly related to *Chlorinus aculeatus* of Milne-Edwards, *C. longispina* of De Haan and *C. acanthonotus* of Adams and White, (which seem to require to be generically separated from *C. heros*, of Leach); it differs from these mainly in the presence of a spine on the basal joint of the antennæ, and the much greater length and slenderness of the ambulatory limbs.

30. Chlorinoides tenuirostris, *sp. nov.* Plate xxvi., fig. 1.

Carapace armed in the middle line with a row of four long, pointed spines, of which two are on the gastric region and two on the cardiac; ten shorter spines or tubercles on the lateral portions of the gastric region; five more or less prominent spines on the hepatic and pterygostomian regions—one close to the anterior angle of the buccal orifice; three longer and four shorter spines on the branchial region, a tubercular eminence towards its inner boundary. Rostral cornua slender, acute, two-thirds of the length of the carapace, divergent from their base. Spine at the distal end of the base of the antennæ, prominent, sub-acute, directed forwards and outwards; a compressed blunt spine situated below the orbit, arising from the base of the antennæ, in front of the orifice of the green gland and directed downwards and outwards; another, much shorter, immediately on the outer side of the orifice of the green gland. Anterior legs as long as the carapace, slender, sub-cylindrical; third joint with a small spine at the distal end of its upper surface; hand very slightly dilated in the male. Second pair nearly two and a-half times as long as the carapace and rostrum; third joint in this and the following pairs with a prominent acute spine above at the distal extremity. Abdomen tuberculated. Length, including rostrum, about one and a-half inch.

Hab. Darnley Island, Torres Straits.

Genus MICIPPOIDES, A. Milne-Edwards.

31. Micippoides longimanus, *sp. nov.* Plate xxvi., fig. 5.

Carapace elongate-triangular, gastric region dilated, armed with eight tubercles, of which two are in the middle line behind, (the last spiniform) and six (smaller), paired, in front; cardiac region prominent, with two or four large tubercles placed close together; two prominent flattened tubercles on the posterior margin, a short spine in the middle line immediately in front of these and forming with them an equilateral triangle; branchial regions dilated, with a few low tubercles. Rostrum inclined obliquely downwards, more strongly deflexed in the female than in the male—consisting of two rather short, triangular, pointed cornua. Eyes retractile; orbits with a single broad fissure above, separating the upper orbital margin from the post-ocular spine. Basal joint of the antennæ broad, divided by a narrow mesial furrow, bilobed at the extremity. A flattened prominence of place it in the same genus, though the greater length of the basal joint of the antennæ affords a well-marked distinctive character.

Genus Micippa, Leach.

32. Micippa parvirostris, *Miers.*

Micippa parvirostris, *Miers*, *Ann. and Mag.*, *N. H.*, (5th series) vol. iv., No. 19, p. 13, pl. iv., fig. 9).

Hab. South Australia, Port Lincoln (Mus. Zool. Soc.); Port Jackson (Australian Museum).

The male has the anterior limbs much larger than the female, with the hand very broad.

33. Micippa spatulifrons, *A. Milne-Edwards.*

Micippa spatulifrons, *A. Milne-Edwards*, *Nouv. Arch. du Mus.* t. viii., p. .

Hab. New Caledonia (Paris Museum); Cape Grenville ("Chevert" Expedition).

34. Micippa inermis, *sp. nov.* Plate xxvi., fig. 3.

Carapace uniformly tuberculated. Rostrum nearly vertically deflexed, with a deep longitudinal mesial furrow; ending in two sub-triangular horns curved slightly outwards and separated by a wide triangular notch. Upper orbital border very prominent, ending behind in a blunt spine; fissures of the upper orbital margin deep. Lateral borders of carapace with a row of short spinous tubercles. Anterior legs (in the female) slender, smooth, about equalling in length the post-frontal region of the carapace; fingers slender, sub-cylindrical, slightly curved, meeting only towards their tips when closed. Ambulatory limbs stout, decreasing in length posteriorly, each with a small tooth at the extremity of the upper surface of the third joint. Body all covered, with the exception of the anterior legs, with long soft hair. Length fourteen lines; breadth one inch.

Hab. Gloucester Passage, Queensland, about five fathoms.

35. **Micippa superciliosa**, *sp. nov.* Plate xxvi., fig. 2.

Carapace granular, hepatic regions depressed. Rostrum nearly vertically deflexed, terminating in four teeth, the inner pair triangular, sub-acute, separated by a wide interval, the outer rather longer, directed forwards and outwards, acute, curved backwards at the tips. A short triangular, præocular tooth; upper orbital border produced, almost tubular; orbital fissures shallow, the first narrow, the second open. Lateral borders armed with six slender spines which increase in length posteriorly. Anterior limbs (in the male) as long as the body ; wrist and hand covered with minute granules arranged for the most part in irregular transverse rows ; hand somewhat dilated ; fingers smooth meeting only near their apex, leaving an oval interspace between them at the base. Length seven lines ; breadth (exclusive of the spines) half an inch.

Hab. Darnley Island, Torres Straits (" Chevert " Exped.).

—the latter compressed, fringed with hairs, the third joint with sharp minutely toothed anterior and posterior borders. Length five lines; breadth four lines.

Hab. Port Denison, five fathoms.

Genus PARAMICIPPA, Milne-Edwards.

37. Paramicippa spinosa, *Stimpson:*

Paramicippa spinosa, *Stimpson, Proc. Acad. Nat. Sci., Philad.*, p. 218, (1857) *Miers, Cat. Crust., N. Z.*, p. 9 (1876).

Hab. Port Jackson, (very common); New Zealand (?) (Brit. Mus.)

38. Paramicippa affinis, *Miers.*

Parramicippa affinis, *Miers, Ann. and Mag. Nat. Hist.*, (5) 19, p. 13.

Hab. Bass's Straits, (Brit. Mus.)

I have seen no specimen of this species.

Genus SCHIZOPHRYS, White.

39. Schizophrys aspera, *Milne-Edwards.*

Mithrax aspera, *Milne-Edwards, Hist. nat. Crust.*, t. i., p. 320; Dione affinis, *De Haan, Faun. jap., Crust.* p. 94, pl. xxii., fig. 4; Mithrax spinifrons, *A. Milne-Edwards, Ann. Soc. Ent. France, 4e série*, t. vii., p. 263, (1867); Schizophrys aspera, *Stimpson, Amer. Acad. of Sc. and Arts, January*, 1860; *A. Milne-Edwards, Recherches sur la faune carcinologique de la Nouvelle Calédonie, Nouv. Arch. du Muséum, tome*, viii., p. 231, pl. x., fig. 1.

Hab. Zanzibar, Madagascar, New Caledonia (Paris Museum); Maurice, Ousima, Borneo (Stimpson); Sue and Darnley Islands, Torres Straits ("Chevert" Expedition).

Genus PARATHOË, Miers.

40. Parathoë rotundata, *Miers.*

Parathoë rotundata, *Miers, An. and Mag. Nat. Hist.* (5), 4, 19, p. 16, pl. v., fig. 2.

Hab. Fiji; Port Curtis (Brit. Mus.)

I have seen no specimens of this species.

FAM. III. *PERICERIDÆ.*

Genus TIARINIA, Dana.

41. Tiarinia mammillata, *sp. nov.*

Carapace sub-triangular, broad behind, ornamented above with pointed and mammiform tubercles, a cross formed by six of these on the gastric region; cardiac region with a prominent eminence crowned by three rounded tubercles placed close together. Cornua of the rostrum about half of the length of the post-frontal region of the carapace, slender, pointed, contiguous throughout their length. Orbit with a prominent pointed, slightly curved spine above and in front, and a compressed spine behind. Anterior legs in the male as long as the post-frontal region of the carapace; third joint with four small teeth on its upper surface, the terminal extremity. Anterior legs having the arm ornamented with a row of five prominent tubercles on its upper border, an irregular row of small flattened tubercles on its outer surface, and two or three on the under surface; wrist and hand smooth; fingers meeting throughout nearly their whole extent, toothed, spoon-excavate. Third joints of the ambulatory limbs ornamented above with prominent tubercles; fourth joint of the first pair with a short tooth at its anterior and distal angle, that of the following pairs each with four low tubercles above.

Hab. Cape Grenville; Darnley Isld., Torres Straits ("Chevert" Exped.)

43. Tiarinia cornigera, *Latr. (sp.)*

Pisa cornigera, *M.-Edw.*, *Hist. Nat. Crust* t. i., p. 335; *Adams and White*, "*Samar.*" *Crust.*, p. 18.

A specimen from Port Darwin in the Macleay Museum probably belongs to this species.

FAM. *PARTHENOPIDÆ.*

Genus LAMBRUS, Leach.

44. Lambrus longimanus ? *Linn.* (*sp.*)

Lambrus longimanus, *Leach*, *Linn. Trans.* t. ii., p. 310; *Desmarest. Cons.*, p. 85; *Milne-Edwards*, *Hist. nat. Crust.*, tome i., p. 354 (1834); *Miers*, *Ann. and Mag. Nat. Hist.* (5th series) Vol. 4, No. 19, p. 20 (1879).

Hab. Pondichery, Amboina, etc. (Milne-Edwards); Java Sea (Adams and White), Dunk Island (MacGillivray), Isle of France (Brit. Mus.); Darnley Island, Torres Straits ("Chevert" Exped.) Port Denison, Queensland (Australian Museum).

45. Lambrus turriger ? *Adams and White.*

Lambrus turriger, *Adams and White*, *Crust.* "*Samarang*," p. 26, pl. v. fig. 2.

Hab. Philippines (Adams and White); Darnley Island, Torres Straits ("Chevert" Exped.)

Adams and White's figure was obviously from a young specimen. The specimen from Darnley Island in the Hon. William Macleay's collection, has the carapace half an inch in length; it differs from the figure in the voyage of the "Samarang" in the rather greater relative length of the anterior limbs, and the less relative breadth of the front, and is probably an adult specimen of the same species.

46. Lambrus harpax, *Adams and White.*

Lambrus harpax, *Adams and White, Crust. "Samar."* p. 25, pl. vi., fig. 3.

Hab. China Sea; Coast of Borneo (H. M. S. "Samarang"); Percy Island, Palm Island ("Chevert" Expedition), Port Denison.

This species is liable to considerable variation; there are two extreme varieties connected by intermediate forms from the same localities. Variety *a.* has the characters of Adams and White's resemble the figure so nearly that I have little doubt that they may be referred to this species.

48. Lambrus affinis, *A. Milne-Edwards*.

Lambrus affinis, *A. Milne-Edwards, Faune carcinologique de la Nouvelle Calédonie, Nouvelles Archives du Muséum*, t. viii., p. 261, pl. xiv., fig. 4.

Hab. New Caledonia (Paris Museum); Port Darwin (Macleay Museum, collected by Edward Spalding).

The Australian specimens differ from those described and figured by Milne-Edwards in having two rounded teeth on each lateral border of the rostrum.

49. Lambrus nodosus, *Jacquinot and Lucas*.

Lambrus nodosus, *Jacquinot and Lucas, Voy. au Pole Sud., Zool.* iii., p. 13.

Hab. New Zealand (Hombron et Jacquinot); Port Denison (Australian Museum, collected by Alex. Morton).

50. Lambrus spinifer, *sp. nov.* Plate xxvii., fig. 1.

Carapace deeply sulcated, armed with four prominent spines in the middle line, one on the gastric region and three on the cardiac; two short spines on the posterior margin; hepatic regions with an angulated, tuberculated marginal ridge separated by a deep groove from the posterior part of the lateral margin of the carapace, and continuous in front with a slight longitudinal ridge running forwards to the outer angle of the orbit; lateral margin of the carapace with a row of seven flattened, slightly serrated teeth, generally increasing in length posteriorly; postero-lateral margin with two prominent spines of which the anterior is the larger; a prominent spine about the middle of the branchial region; infero-branchial region armed anteriorly with a row of about nine short blunt, serrated teeth, and behind with a prominent flattened tooth situated behind the insertion of the anterior legs, and a tuberculated ridge just above the base of the ambulatory legs. Front obliquely depressed, prominent, ending in one mesial, longer, and two lateral, shorter, teeth. Anterior legs two and a half times the length of the carapace and rostrum; a row of seven to twelve conical or compressed teeth on the anterior margin of the arm, four or five conical teeth or more elongated spines on its upper surface, and three more or less prominent spines on its posterior border; hand with a row of four to six larger and four or five smaller triangular spines on its outer border, and about ten of similar shape on its inner; fingers stout, only slightly crossed at the tips when closed. Posterior limbs having the third, fourth and fifth joints armed above with a toothed ridge, most prominent on the third joint, which is armed also below with two rows of small tubercles. Length 1¼ inch.

Hab. Cape Grenville, Darnley Island ("Chevert" Exped.) Port Denison.

This species is allied to *L. validus*, De Haan, but is distinguished from it by its longer rostrum and the form and arrangement of short, strongly deflexed, ending in a rounded knob, deeply channelled above—the channel interrupted just in front of the eyes by three small rounded tubercles on either side. Antero-lateral margins with a rounded eminence crowned by a tubercle, on the hepatic region, followed by a sharp projecting rim formed by nine closely approximated compresssed lobes granulated on their outer borders, the ninth longer than the rest, and with an accessory tooth on its posterior border; postero-lateral angle armed with a prominent blunt spine with three or four short, blunt branches; posterior border with two compressed triangular teeth, of which the outer is much the larger, near the postero-lateral angle, and two tubercles on either side above the insertion of the abdomen. Arm with seven or eight irregular compressed triangular teeth on its posterior, and three on its anterior border, four prominent tubercles situated in a longitudinal row on its upper surface; wrist with a few depressed tubercles; hand with numerous, mostly granulated tubercles, irregularly scattered on the upper surface, forming several irregular rows on the posterior (external) surface, a row of seven or eight on the anterior (internal) border and another of about half a-dozen on the lower border; fingers stout, minutely granulated, movable finger with a crest of laciniated teeth above. Ambulatory limbs compressed, carinated, an irregular number of teeth on the carinæ; terminal joint very long and slender.

Hab. Port Denison, Queensland (3 or 4 fathoms).

This well-marked species is in many respects intermediate between *Parthenope tarpeius* of Adams and White, and *Parthenope calappoides* of the same authors; it differs, however, from the former in the less flattened tubercles, the presence of the postero-external spine, and the acute lateral margins, the form of the front and other minor points; and from the latter in the more even surface of the carapace, the absence of the deep pit on the front and the shape of the anterior limbs. Named after Mr. G. F. Sandrock, Collector of Customs at Bowen, Queensland, through whose assistance I obtained my first specimen of the species,

Genus CRYPTOPODIA, Milne-Edwards.

53. Cryptopodia fornicata, *Fabr. (sp.)*

Cancer fornicatus, *Fabr.*, *Ent. Syst.* t. ii., p. 453; *Herbst*, pl. 13, figs. 79—80. Œthra fornicata, *Lamk.*, *Hist. des An. s. vert.* t. vi., p. 265; *Desmarest*, *Consid.* p. 110. Cryptopodia fornicata, *Milne-Edwards*, *Hist. Nat. Crust.* t. i., p. 362; *Adams and White*, *Zool. of H. M. S. "Samarang," Crustacea* p. 32, pl. vi., fig. 4.

Hab. Indian Ocean (Paris Museum); China Seas (H. M. S. "Samarang"); Brook Island; Cape Grenville ("Chevert"); Port Denison.

54. Cryptopodia spatulifrons, *Miers.*

Cryptopodia spatulifrons, *Miers*, *Ann. and Mag. Nat. Hist.* (5) iv., 19, p. 26, pl. v., fig. 10, (1879).

Hab. Shark's Bay, Western Australia (H. M. S. "Herald"); Port Jackson (Australian Museum).

Genus GONATONOTUS, Adams and White.

56. Gonatonotus pentagonus, *Adams and White.*

Gonatonotus pentagonus, *Adams and White*, *Zool. "Samarang" Crust.* p. 33, pl. vi., fig. 7.

Hab. Coast of Borneo (H. M. S. "Samarang"); Port Denison 5 fathoms (Mr. Alex. Morton).

57. Gonatonotus crassimanus, *sp. nov.* Plate xxvi., fig. 4.

Carapace and limbs covered with miliary granulatious. Rostrum deeply cleft anteriorly, the cornua straight—the cleft continued on the dorsal surface of the carapace into a mesial groove which reaches nearly half-way towards the posterior border. Branchio-cardiac groove very deep. Anterior limbs once and a-half as long as the carapace, second and third joints each with a small compressed tooth on its anterior margin; fourth joint armed with a prominent slightly curved tooth; hand with two strong blunt teeth above, fingers stout, acuminate, armed with a few triangular teeth. Posterior limbs carinate above, the carina on the third joint with two inconspicuous tubercles, and ending distally in a tooth-like process. Length five and a-half lines; breadth four and a-half.

Hab. Port Jackson (Australian Museum).

This species marks a transition towards *Eumedonus*, being only distinguishable from that genus by the straight rostrum. It differs from *G. pentagonus* in the more deeply cleft rostrum, as well as in the greater length of the lateral process, and other points.

Genus HARROVIA, Adams and White.

58. Harrovia tuberculata, *sp. nov.* Plate xxvii., fig. 1.

Dorsal surface of carapace with eight tubercles crowned with bundles of hairs, four of them on the gastric region in pairs, the anterior pair situated far apart, the posterior close together; two close together in the same transverse line on the anterior part of the cardiac region; one on each branchial region. Antero-lateral margins with two teeth, situated close together, the anterior low, triangular, blunt, the posterior, occupying the lateral angle, more prominent, triangular, acute. Supra-orbital tooth pointed, projecting slightly beyond the front. Ambulatory limbs compressed; third joints of the second, third, and fourth pairs with a tooth at the distal end of the upper border; upper border of the third joint of first pair with two small tubercles towards the middle above, that of the second and third pairs each with a single tubercle in the same situation. Abdomen (of male) with lateral fringes of hairs. In other points resembling *Harrovia albo-lineata*.

Hab. Darnley Island ("Chevert" Exped.)

* * *

Of the genera mentioned above only three—viz., *Stenorhynchus*, *Achæus*, and *Lambrus*,—all of which are found in European seas—

well-defined faunas are, however, readily separated and contrasted —viz., the temperate and the tropical, as represented on the northern, eastern, and southern coasts. Only six genera of the present group—viz., *Oncinopus*, *Stenorhynchus*, *Huenia*, *Hyastemus*, *Cryptopodia* and *Gonatonotus* seem to be common to the two contrasted zones, which may be regarded as separated by the parallel of about 25° of south latitude. Characteristic of the northern region are the genera *Egeria*, *Camposcia*, *Xenocarcinus*, *Menæthius*, *Parathoë*, *Chlorolibinia*, *Naxia*, *Tiarinia*, *Schizophrys*, *Lambrus*, *Zebrida*, *Harrovia* and *Chlorinoides*; and of the southern *Achæus*, *Halimus*, *Paramithrax*, *Paramicippa*, *Micippoides* and *Gonatorhynchus*.

None of the Australian species extend beyond the Oriental Region, though one of them—*Camposcia retusa*—ranges at least as far west as Mauritius. Three extend as far north as Japan—viz., *Huenia proteus*, *Hyastenus diacanthus*, and *Schizophrys aspera*; while ten connect tropical Australia with New Caledonia, Borneo, the Philippines or China, viz., *Menæthius monoceros*, *Egeria Herbstii*, *Lambrus longimanus*, *L. turriger*, *L. harpax*, *L. hoplonotus*, *L. calappoides*, *L. affinis*, *Cryptopodia fornicata* and *Gonatonotus pentagonus*. Of species common to Australia and New Zealand there seem to be eight, viz., *Stenorhynchus fissifrons*, *Huenia bifurcata*, *Paramithrax peronii*, *P. barbicornis*, *P. sternocostulatus*, *Hyastenus diacanthus*, *Paramicippa spinosa*, and *Lambrus nodosus*, though it is not unlikely that the list may subsequently require modification, as in many of the earlier collections "New Zealand" and "Australia" appear to have been regarded as almost interchangeable terms.

EXPLANATION OF PLATES.

Plate XXV.

Fig. 1. *Micippa curtispina*, 1*a*—rostrum.
,, 2. *Microhalimus deflexifrons*, twice the natural size.

Fig. 3. *Leptomithrax spinulosus*, natural size.
,, 4. *Gonatorhynchus tumidus*, natural size.
,, 4a. Buccal and antennary region of the same.

Plate XXVI.

Fig. 1. *Chlorinoides tenuirostris*, natural size.
,, 1a. Buccal and antennary region of the same.
,, 2. *Micippa superciliosa*, twice the natural size.
,, 2a. Rostrum of the same.
,, 3. *Micippa inermis*, natural size.
,, 3a. Rostrum of the same.
,, 4. *Gonatonotus crassimanus*, natural size.
,, 5, *Micippoides longimanus*, natural size.

Plate XXVII.

Fig. 1. *Lambrus spinifer*, natural size.

A few days after I procured the above, I had brought to me a fine adult specimen—also a female—of the great Sea Shark *Carcharodon Rondeletti*. It was a very bulky, heavy fish, measuring 8 feet 6 inches in length (reported in the Papers as 16 feet), and was, like the other, wonderfully free from parasites of any kind. It was also without young or even enlarged ova.

The third Shark, also got about the same time, was a fine, full-grown specimen of *Pristiophorus cirratus*. It was caught by a boy in the harbour, purchased from him by Mr. Ebsworth and presented by him to my Museum. It also was a female, and the oviducts contained three large eggs, (the size of a hen's egg) on one side, and two on the other, all of the same size. I have never heard of an instance of the capture of this species of Saw Fish in Port Jackson until now.

J. Brazier Esq., C.M.Z.S., submitted Mr. R. C. Rossiter's *Onixia ponderosa*, New Caledonia; two specimens of *Helix Thomsonii* from Tukan Bessi, and sent by Mr. Thomson of New Bedford. Also the species mentioned in his paper.

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WEDNESDAY, NOVEMBER 26TH, 1879.

W. J. Stephens, Esq.. M.A., Vice-President, in the Chair.

Mr. Lamont Young, C.E., F.G.S., Geological Surveyor, was introduced by C. S. Wilkinson, Esq., F.G.S.

DONATIONS.

From Dr. Hector—The New Zealand Tourist, by Thomas Bracken.

From Harwood College.—Bulletin of the Museum of Comparative Zoology, Vol. 5, Nos. 11 to 14.

Dr. Bancroft.—Diseases of Animals and Plants, Brisbane, 1879.

From Melbourne University.—Calendar for 1879-80.

From Mr. C. Pickering.—Chronological History of Plants, by C. Pickering, M.D.

Report of the Salmon Commission, Tasmania.

From Professor Liversidge.— International Congress of Geologists at Paris, 1878.

From Professor Owen.—On the Extinct Animals of the Colonies of Great Britain.

PAPERS READ.

NOTES ON THE ABERCROMBIE CAVES.

BY C. S. WILKINSON, L.S., F.G.S., GOVERNMENT GEOLOGIST.

I desire to lay before you a brief description of the Abercrombie

Easter Cavern and Grand Archway of the Binda or Fish River Caves. This natural tunnel is about 200 yards in length, 20 to 60 yards wide, and 50 feet high. Its interior is ornamented with numerous stalactites and stalagmites of most grotesque and fanciful forms—from projecting ledges the pendant stalactites resemble cascades, others hang in folds like curtains, while below the fluted stalagmites rise to meet them. The vaulted and craggy roof of the cavern is colored in places with light tints of pink and green, mottled with white, caused by some minute fungoid or other vegetable growth, producing a very pleasing effect; and the beauty of the whole scene is still further enhanced by the admission of daylight from the upper and lower entrances of the archway; and about these entrances, and even within them, may be seen different varieties of ferns, some sheltered in crevices in rocks, and others clinging to the moist walls or hanging gracefully from broken ledges of the white marble limestone. Through this decorated and beautiful natural arch the Grove Creek flows over a gravelly bed, leaving here and there a quiet pool of clear water; but the debris of drift timber left upon the craggy walls, shows that a great volume of water must at times flow through the tunnel. The gravel contains a little gold, but not in sufficient quantity to pay for its extraction. The limestone is full of corals encrinites &c., and is interbedded with Silurian shales and sandstones, which compose the high and rugged ranges rising steeply on both sides of the creek, and in which occur numerous quartz reefs, some of which have been worked for gold. The limestone has become so crystalline in structure as almost to obliterate all traces of the fossils; but when polished (and it takes a high polish) these may be plainly seen. It occurs, as it does in many other parts of this Colony, in irregular lenticular masses which, in places, are several hundred yards in thickness, and then in a short distance they suddenly thin out: these are no doubt the remains of coral reefs which once grew in the Silurian ocean, but are now some 2,000 to 3,000 feet above the sea level.

From the large Arch or Tunnel, several smaller caverns branch off, which I had not time to examine closely. One of these is entered from the east side and near the upper entrance to the Archway: after a few yards it divides into several passages which a little further in are found filled up with red earth containing fragments and logs of wood. But this red earth is perforated in all directions with the burrows made by wombats. These animals still inhabit this cave, but by what way they enter it is not known; for it is impossible that they could climb the rocks or enter by the passage we did, so that they must have some entrance from the side of the valley, which it would be important to discover. I have no doubt that some fossil bones might be found in this red earth deposit, which I purpose shortly to examine. There is a small but interesting stalagmite in this cave; it stands in three tiers with fluted sides.

We can only arrive at the geological age of these caves from a consideration of the formation of the physical features of the

the Pliocene channel was cut through, for the valley to have been eroded several hundred feet deeper, and this before the drainage water began to pierce the bed of limestone in which the caves are. There can therefore be no doubt that these caves were formed subsequently to the Pliocene period, and towards the close of the Pleistocene period.

They were discovered about 35 years ago, by the late Surveyor General Davidson, when he was engaged upon the survey of the Grove Creek; and were visited a few days afterwards by the late Mr. W. C. Wentworth, and then by Governor Fitzroy. No doubt in the future they will be resorted to by many tourists.

NOTES AND EXHIBITS.

Note on *Scomber antarcticus*, by William Macleay. F.L.S., &c.—The Mackerel has been rather abundant lately in the Harbour, and I am informed that, about a fortnight ago, the sea outside the Heads was literally alive with them. They were apparently young fish, and all seemed to be migrating in a northerly direction. It is much to be desired that Fshermen and others who have the opportunity of observing the movements of these and other useful fishes, should make notes of the date of such appearances, and communicate the same to me or some member of this Society, as it is only by a combination of observations that a knowledge of the habits of fishes can be ascertained with certainty.

J. Brazier Esq., C.M.Z.S., exhibited the typical *Voluta Angasi*, of Lamarck, obtained by Mr. W. T. Bednall, at Port Lincoln, South Australia. The variety *Voluta Angasi*, (Sowerby) procured by Rev. H. D. Atkinson at Circular Head and Barren Island, Bass's Straits, also the variety *V. Kingi*, (Cox), obtained by Mr. A. Simson at Barren Island.

Mr. J. Hobson exhibited a number of entomological specimens in spirits from the Solomon Islands.

WEDNESDAY, DECEMBER 31st, 1879.

The Hon. W. Macleay, M.L.C., F.L.S., in the Chair.

Mr. Andrew Goldie, from New Guinea, was present as a visitor.

Lamont Young Esq., C.E., F.G.S., Geological Surveyor, was elected a member of the Society.

DONATIONS.

From Baron F. von Mueller, K.C.M.G., "Eucalyptographia," Decade IV.

From Royal Society of London, Proceedings of the Society, Vols. XXVI., to XXIX.

From Societe Entomologique de Belgique, Compte Rendus, Nos. 66 to 68.

Lieutenant Richards, R.N., has also very kindly allowed me to examine a fine collection made by him at the Solomon Islands and Duke of York groups, from which I have described a few species appearing to me to be new. His fine collection and the careful data have afforded me much useful information in the preparation of a revised list of Birds of Duke of York Group, which I hope shortly to lay before the Society.

ASTUR BRACHYURUS, *sp. nov.*

Head and the whole of the upper surface dark blue slaty-grey, lighter on the cheeks ; a collar of rich rufous round the back of the neck, throat and all the under surface ashy-grey, becoming white on the abdomen and under tail coverts ; wings blackish slate-blue above, freckled and barred with the same tint on the inner webs, which are ashy at the base and on the under surface washed with fawn color, about 10 bars on the quills ; tail dark bluish slate-grey above, ashy on the under surface, the centre and outer tail feathers without bars, the rest crossed with 10 to 12 blackish bars ; feet and legs yellow ; bill and claws black, cere yellowish ; total length 13 in., wing 8 in., tail 6 in., tarsus 2·5, mid toe, s. u. 1·6, first joint 7·5, second 0·5, third 0·5, hind toe, s. u. 8·5 ; its claw above the curve, 1 in.

The long mid. toe of this species gives it more the look of an *Accipiter* than of an *Astur*.

Hab. Thirty miles inland.

? ASTUR SPILOTHORAX, *Salvadori.*

The whole of the upper surface dark bluish-slate color, the base of the feathers on the head and nape being white ; cheeks bluish ashy-grey ; throat and all the under surface white, each feather striped down the centre with blackish ashy-brown, forming narrow lines on the throat, flanks and thighs, and under tail-coverts, and broad lanceolate shaft lines on the chest, breast and sides ; under wing-coverts white, or slightly tinged with buff, also with remains of linear shaft lines; quills of the wings and tail barred by 8 to 10 blackish-brown bars, which do not reach the margin of the inner webs, margin and bases of the inner webs white, or faintly tinged with buff on the primaries, all the tail feathers barred except the centre two; central portions of the scapulars white, with remains only of the bars. Bill, 0·9; culmen, 1 in.; length, 13 in.; wing, 7·5; tail, 6·5; tarsus, 2·3; bill and claws, black; base of lower mandible, cere, and legs, orange-yellow; sex, ♂?.

Hab. Inland from Port Moresby, about 40 miles.

I have given a description of this bird, as I am not quite convinced that it is altogether identical with the *Astur spilothorax* of Count Salvadori.

NINOX TERRICOLOR, *sp. nov.*

All the upper surface of the body, head, wings, and tail dark below, dark fulvous and chocolate-brown, barred indistinctly, outer series barred with dark brown and white; total length, 9·5 to 10 in.; wing, 6·5; tail, 3·8; tarsus, 1 in.; culmen, 1 in.; bill from cere to tip, 0·5.

Hab. Goldie River, 30 miles inland.

? TANYSIPTERA MYMPHA, *juv.*

The young bird is of a uniform dull brown, the chest and upper tail-coverts vermilion-red; wings, blackish with the outer webs of the quills bluish, and the tips of the coverts light rufous-brown; two centre tail feathers blue, with white tips; bill coral red; legs and feet, reddish-brown. This may eventually prove to be the young of a more allied species.

Hab. Goldie River, 30 miles inland.

? RHECTES (*Oreoica ?*) BRUNNCICEPS, *Salvadori.*

Upper surface dull earthy-brown; the upper tail-coverts and tail darker, and of a rich rufous-brown, hind neck and cheeks rufous-brown; all the under surface pale rufous, deeper rufous on the sides of the neck and chest; head with erect crest, inclining to rufous-brown; bill, black; legs, dull-brown; length, 8·6; wing, 4·4; tail, 3·5; tarsus, 1·5; bill from forehead, 1 in.

Mr. Goldie informs me that this bird has a loud ringing bell-like note, from which it became known to his party as "Bell-bird."

The bill is comparatively short, strong, laterally compressed, somewhat wedge-shaped, like that of *Oreoica*, length of bill, 1 in.; culmen, 1·05; height of mandibles at nostrils, 0·4; breadth, 0·25; length from nostril to tip, 0·55; from tip of upper mandible to gape, 1·1 in. First quill half the length of the fifth, which is longest; fifth, sixth, and seventh nearly equal; the second quill distinctly shorter than the longest secondary.

Hab. Goldie River, 30 miles inland.

PIEZORHYNCHUS MELANOCEPHALUS, *sp. nov.*

(? Piezorhynchus vidua, *Trist.*)

The whole of the head and throat black, with slight blue-black gloss; back, wings, and tail, black; the three outer feathers of the latter tipped with white; greater coverts of the wings white, slightly margined at the tips with black; lesser coverts white, margined with black; a few of the scapulars margined or tipped laterally with white; a broad white band across the nape, tipping the black ear-coverts with white; uropygius and upper tail-coverts, white; chest and remainder of the under surface white; margins of the wings below, black; under surface of the quills, blackish; bill black; legs, lead-color; total length, 5·5 to 6 in.; wing, 2·65; tail, 2·7; tarsus, 0·7.

"*♂ iris, feet, and bill, black; "Makira Harbour, San Christoval, May* 21*st,* 1879."—*(Richards.)*

MYZOMELA FORBESI, *sp. nov.*

The whole of the upper and under surface and margins of the shoulders below, jet black; under wing-coverts and margins of the inner webs of the quills, except the tips, white; on the front of the head a somewhat square shaped patch of rich crimson.

A specimen, said to be the female of this species is exactly the same in plumage, but without the crimson on the head.

Total length from tip of the bill, 4·4 inches; wing, 2·4; tail, 1·7; tarsus, 0·6; bill from forehead, 0·8, from nostril, 0·5, from gape, 0·75.

Hab. Woodlark Island.

I have named this species in honor of W. A. Forbes, Esq., F.Z.S., from whose valuable monograph on this family I have derived much useful information.

Among the Honey-eaters is another species of a jet black color from the Goldie River, probably identical with *M. nigrita,* of G. R. Gray, and what at present I take to be a specimen of *Glycichaera fallax* of Salvadori.

? DREPANORNIS D'ALBERTISI, *Sclater.*

A female only of this (?) remarkable species was obtained, which differs but very little from Mr. Gould's drawings of the original, nevertheless from the much lighter tint of rufous on the upper coverts and rump, and dark brown head and neck above. I am inclined to think it may represent a distinct species, when specimens of the male bird are received from this *new* locality, a better comparrison can be made.

Hab. Dense scrubs inland from Port Moresby, Goldie River.

MANUCODIA COMRII, *Sclater.*

One of the most remarkabe features in the collection, is a series of this fine species, adults, males and females, the true habitat is D'Entracasteaux Island.

The following are the measurements of some of the specimens:

	Inches.	Inches.	Inches.	Inches.
Sex	♂	♂	♀	♀
Total length	17·8	16·5	16·	16·0
Wing	9·2	9·2	8·7	8·5
Tail, outer feathers	6·0	5·9	6·0	6·2
Tail, centre curved feathers ..	6·6	6·5	6·2	
Tarsus	2·25	2·25	2·05	2·05
Bill, from forehead	2·3	2·2	2·1	2·05
Bill, from gape	2·2	2·15	2·05	2·0
Bill, from nostril	1·5	1·4	1·3	1·3

There are also two species of Cassowarys, one ? *Casuarius uniappendiculatus*, the other probably *C. beccarii*. The helmet of the one I believe to be *C. uniappendiculatus*, adult, resembles that of the *Morruk C. bennettii*.

In a future paper I hope to give a complete list of the collections made by Mr. Goldie, numbering about 1400 skins.

NOTES AND EXHIBITS.

Mr. Ramsay displayed a very extensive series of the new and rare birds described in his paper, including a species of *Donacola* from New Britain, a *Piezorhynchus* from San Christoval, an *Astur* from New Britain, and one from New Guinea inland from Port Moresby, and from the same locality a new *Rhectes*, a *Myzomela* and a *Sericornis*, &c., &c.

Dr. Cox exhibited a fine *Crustacean (Astacopsis)* found by the Hon. E. K. Cox, in a small creek near the top of Mount Wilson, and three Fish *(Galaxias)*, from the same locality.

J. Brazier Esq., C.M.Z.S., exhibited a *Chione calophylla* with a small pearl found therein. Also two valuable books—"Donum Bismarckiana," Berlin, 1871; and "Uber die familie der Rissoiden von Mohrenstein," Wein, 1860.

Mr. Masters showed specimens of *Heterodontus philippii* and *H. galeatus*, and pointed out the difference between them. He also drew attention to a cluster of Barnacles which had attached themselves to the dorsal fin of the latter.

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ANNUAL MEETING, WEDNESDAY, JANUARY 28TH, 1880.

The President, the Rev. J. E. Tenison-Woods, F.G.S., F.L.S., &c., in the Chair.

The Secretary having read the minutes of the last Annual Meeting, the President delivered the following address:

PRESIDENT'S ADDRESS.

In delivering to you the customary address at the close of our scientific year, I have thought it desirable to call your attention to the work which is going on in the Australian Colonies in the department of natural history. Before I do so, I wish to make some observations on a prevalent opinion, that the natural sciences are immensely more popular in the present day than ever they have been at any previous epoch in the world's history. I question, however, if the opinion is quite correct in the ordinary sense of the word popular. If we mean that there are more students of the scientific aspect of the subject, or that such works address a larger section of the reading public, it is certainly not correct. That books on natural history are more numerous is true, and that they are cheaper and of a better class is also true. This is in keeping with the general inprovement which has taken place in all departments of literature. There has grown up likewise a class of books on the subject which was unknown before the present century, or even in the beginning of it. These are what are called popular books, meant for those who have no time or no inclination for more than light reading. But the scientific students are still few, and those who interest themselves in their labours are confined to a very small circle. We find this there recorded. Each year has seen a rapid increase in the number of papers read, and the subjects treated, but this has only been by increasing the labours and studies of the few real students of nature in the Colonies. This does not surprise one so much as that the results of our work are so entirely unknown. Well, not unknown entirely, because, I suppose, there is not one of you who do not receive from time to time letters of encouragement and sympathy from the greatest living naturalist in Europe and America. But in the Colonies they are unknown, and will probably remain unknown in our generation. I do not refer to this in terms of complaint, for the remedy is out of our reach, but I do so that we may fairly estimate what is the scientific spirit of the present day. Science and scientific study are not popular. Scientific results, when they benefit mankind, are appreciated and admired, men of science, when their reputation is established hold a high and honourable position; but the labour by which all this is acquired has very few votaries indeed. It is necessary to bear this in mind when estimating what is being done amongst us in the present day in the Colonies of Australia. It may be thought that the result is very small, and in such an untrodden field, where laurels are so easily gathered, the workers are few. People are accustomed to think that we are making great strides. They point to the popular books and their elaborate get-up as a good indication of what a harvest is being gathered. Yet how few are aware of the worthless character of a large proportion of our popular scientific literature.

In one respect there is a gain. If we compare, for instance, such a book as "De Montfort's Conchology" with any modern work on the subject, how vast is the improvement. Who would think, from the rude style and almost barbarous illustrations, that De Montfort wrote barely fifty years ago. All the modern works share the improvement in externals, but here the gain begins and almost ends. With very few exceptions popular books teach nothing solidly, and a good deal very incorrectly.

Some may urge that the place which the natural sciences occupy in our University education, is at least an evidence of popularity. But the place they take is a small one. The little that has to be known of these matters at matriculation, seems to me insufficient to create a taste for them, and with the exception of those whose professional studies require it, they are not followed subsequently.

The circumstances of young colonies are so peculiar and exceptional that it would not be fair to compare our literature or our studies with those of any old established country. Of course we should suffer much by the comparison. Our habits and our institutions are not those of a studious people. Men of real learning have no place amongst us, and are consequently rarely to be found. This is why, perhaps, so much of the public utterance of our speakers and writers are greatly below the standard in breadth and depth. It would be out of place for me to remark this, even casually, were it not that it trenches on the be a matter of doubt. As an instance of this, I may refer to the magnificent paper of the Rev. Professor Henslow, lately published in the Transactions of the Linnæan Society of London. The learned professor has been following up Darwin's observations on the self-fertilization of plants. It will be remembered that Dr. Darwin's observations on the varieties of the common primrose led to the discovery of certain provisions to secure cross fertilization. The facts thus revealed were so new, so startling, and at the same time so full of interest, that the field was entered upon with ardour by nearly every botanist in Europe. As a matter of course the conclusions of Dr. Darwin were pushed to the extreme. Even the most eminent naturalists were led into extravagant assertions, which, at best, were only supported by a slender array of facts, and some even roundly asserted that self-fertilization never took place. These were not men of eminence, but their opinions were eagerly seized by those whose knowledge was too slight to discriminate, and whose prejudices were too strong for caution. By no one were these excesses more deplored than Dr. Darwin, whose love of his favourite theory is great, but whose love of true science is greater. When Professor Henslow commenced his investigations he states that he adopted Dr. Darwin's views about the self-fertilization of flowers. What has induced him to abandon them is beautifully seen in the facts which a long and patient inquiry has revealed. So far as he has gone he finds self-fertilization the rule and not the exception. The whole paper is a monument to his conscientious care and industry. It is a delightful instance of the perfection of those methods of inquiry of which Dr. Darwin is the illustrious author.

In the meantime, Darwinism, or the doctrine of development or evolution, as it is variously termed, is being vigorously handled by those whose speaking and reading hardly give them time for reflection. It has also become the prey of the metaphysician. There the naturalist might well be content to leave the philosophical question which underlies the whole subject. It is out of the reach of all the methods which he can bring to bear upon it. Those who believe, as I do, that there is a Creator of all things, visible and invisible, cannot be affected by opinions necessarily formed independently of real knowledge. If however, there is any opinion forced upon my mind by whatever study I have been able to give to nature, it is that there is almost infinite variety in everything created. The hundred thousand or more known species of plants, the bewildering multitude of forms of animal life, the countless stars, the epochs of past creations imbedded in the rocks, the metals and their combinations, the gems and their forms of crystal and colour, the amazing, the endless aspects of all matter, unite in one testimony the infinite variety of nature. There is a plan in all, a unity in all. The recognition of that plan is the daily labour of naturalists; but while they perceive this, they recognise also the endless variation of the means. No two species are made alike, no two produce their seed by exactly similar contrivances. There are plants which produce no seed, in our own day. As in the case of most schools of thought, the truth will be found to lie between the two extremes. The grand truth looming in the future seems to be development through the most varied means, one of which may be evolution. But we cannot help deploring that questions on which the vital interests of modern society certainly hang, should have been prejudiced so much by ignorance of the natural sciences. The hottest disputants have been men whose knowledge was derived from very imperfect sources. Sweeping assertions, unjustifiable conclusions, false inferences, and an unfair use of facts, have all been used as weapons under the banner of a pretender miscalled science. This could not have happened were the general public more acquainted with the subject—nor, indeed, we may be sure, would such a standard ever be raised. Can we hope that such a consummation will be reached, if not in our own time, at least at some future day? Perhaps the existence and success of our little Society is an earnest that we can. Still I would remind our members that a good deal rests with ourselves. We can do much to make the natural sciences a little more popular. We can influence, we can encourage those outside—and, above all, we can help each other. I hope it will not be considered an impertinence if I refer to two things which rest with ourselves. It is somewhat sad to think how much science is delayed by the jealousies and bitterness of scientific men. I would not refer to this if I had not in my mind a keen recollection of the opposition and rebuffs I met with myself in early days. It is therefore with the most pleasant feelings I glance over the history of this Society, and see how smooth and untroubled has been its current during that history. I trust this will be one of its constant traditions. The other point to which I refer is the helping hand which we can extend to the students of science, especially to beginners, and to the public generally. There are, I am convinced, a great number of lovers of nature through the length and breath of this land who would be its students could they but see a way to begin.

I am sure, also, that most valuable observations are made and would be recorded, but are now lost. The work that we can do for science by encouragement, and by taking a little trouble for those who wish to be observers, would be more than what our own observations would effect. I am fully aware of the great extent to which this has been done already, but I would venture to suggest that it should take a more systematic form. If we were to form a special committee, to whom all enquiries should be referred, and then let it be widely known that any specimens forwarded to our secretary for examination would be attended to and information returned to the sender. We have amongst our working members enough of specialists to do this work, and on whom we could rely, will appear more plainly as I proceed. Thus I am sure we should gather an immense amount of observations, and what is more important would awaken a wide-spread interest in the natural sciences, and tend to make them truly popular.

History Society of Metz, with Arthur Morellet's descriptions, or how difficult it would be to obtain Menke's Latin pamphlet on the Mollusca of New Holland, published in Hanover. A valuable pamphlet of Menge's on the Mineralogy of South Australia is as difficult to meet with as an Elzevir Sallust. I have never been able to meet with Leschenault de la Tor's Notice of the vegetation of New Holland (Paris, 1824), and I don't think a copy of Meinicke's Das Festland Australien (Prenzlau, 1837) is to be found in Australia. But now our workers are amongst ourselves, and our work for the most part is to be found in Australian publications which are easily accessible. Time will not permit me to refer at any length to the learned Societies of the various Colonies, but I cannot help specially noticing the advance and improvement of two. Just as Professor Liversidge has infused new life into the Royal Society of New South Wales, so Professor Tate has done for the almost defunct Philosophical Society of South Australia. The Tasmanian Royal Society has improved remarkably within the last few years in the number and value of its original papers. In Melbourne the very useful Microscopical Society, which had lapsed into inactivity, has been re-organized, and rendered most effective and serviceable by the energy of its secretary, Mr. Goldstein. This gentleman has long been known to me as one of the most painstaking and conscientious observers in marine zoology. His especial province has been on the animals of our *Polyzoa*, a completely untrodden field. In conjunction with Mr. Maplestone, of Portland, Victoria, he has observed and drawn a considerable number of the forms inhabiting the cells of *Catenicellidæ*, about which nothing was previously known. Altogether the "Proceedings of the Melbourne Microscopical Society," which are now published, form a valuable and interesting addition to our colonial scientific annuals. The Royal Society of Victoria still keeps up a certain position in the scientific annals of the Colony. It is much to be regretted that the scientific men in Victoria do not take a more active interest in a Society which might assist them so materially, for it has large resources, and a valuable property. Up to this the greater part of the burden of sustaining it devolves upon Mr. Ellery, F.R.S., the Government Astronomer, and some few other gentlemen.

In referring to the labours of scientific men in the Colonies, Baron von Müeller's efforts are too well known to need comment. During the last year he has published the following works:—1. Four decades of "Eucalyptographia," a descriptive atlas of the *Eucalypts* of Australia &c. 2. "Forest resources of Western Australia," with illustrations. 3. "The native plants of Victoria," succinctly defined. 4. Continuation of "Fragmenta Phytographia" for Vol. II. 5. "Suggestions on Forests." 6. "On Vegetable Fossils of Auriferous Drifts." His work on the *Eucalypts* will be one of the most beautiful and lasting monuments to his industry and genius. It will help to clear up a portion of our floral classification, which is confessedly obscure. It may not do all that is to be done, but it will be a wonderful step in the advancement he is acquainted. It would be a most valuable record, which no one is more qualified to give. Mr. R. D. Fitzgerald's work on the Australian Orchids still continues to give the public the fruits of his careful and industrious observations, and the beautiful illustrations from his graceful and artistic drawing.

The labours of F. M. Bailey, F.L.S., are not so generally known, and on that account are deserving of some detailed mention. Residing in Queensland, he has for many years devoted himself to the flora of that colony. It is now some six years since he published an excellent illustrated handbook of Queensland Ferns, a work, apparently, of unpretending character, but full of the most important and valuable observations. Of late years Mr. Bailey has devoted himself to the elucidation of our Australian Fungi, Lichens, and mosses, seconded by the most eminent specialists of Great Britain, and including Messrs. Berkeley, Broome, Stirton Leighton, and Mitten. As there has been little or nothing known of these several departments, it will not surprise us to learn that a large number of new species are being discovered. Some of these were described last year in the transactions of the Linnæan Society of London, by Messrs. Berkerley and Broome. I may mention that Mr. Bailey and myself have been engaged during the past year in preparing a census of the Fungi of all Australia. In making this examination we have found that while in the tropics there are many indigenous species, a considerable proportion are identical with those of India. Outside the tropics the indigenous species increase, but there is also a marked proportion of European species. In all the three divisions of Lichens, Mosses, and Fungi, we find a much larger resemblance to the flora of remote countries than in more highly organized members of the vegetable kingdom. This is in accordance with what is gradually being recognized as a principle or law throughout nature. The more simple the organism, the more ancient its life history, and the more universally distributed over the surface of the globe. I am not sure that every naturalist would formulate the law precisely in these terms, but all would readily admit the facts upon which it is based. It is for this reason that Mr. Bailey's researches into the "lower orders" of our Australian flora are replete with interest. The Crytogamic flora is also included in his investigations, and he is just now engaged in the publication of a work on the Queensland Ferns. I may mention that he is employed by the Government as keeper of a Herbarium which gives him special opportunities for observation. Though the Government of Queensland does very little for science, yet this is an extremely valuable exception.

It is very much to be regretted that we have no complete Herbarium for New South Wales, the oldest colony of all, and the one where it is most needed as a record. While the collections of Cunningham, of Foster, of Solander, and Robert Brown are to be found in Kew, we have not a single good public collection of our native plants in this colony. It should be remembered that commodity in Europe. It is a bitter bark with tonic properties superior to almost any in use, and perfectly safe. This is all the more strange, as *Alstonia* belongs to the so-called dogbanes, one of the most poisonous families of plants, though an Indian species of the same genus is used in India as a tonic. This Queensland tree grows rather abundantly on the Darling Downs on the edge of the Acacia scrubs. The same observer finds in the native pepper of Queensland *(Piper Novæ Hollandiæ)* an aromatic extract which in large doses produces the symptoms of narcotic poisoning on the lower animals. He has also discovered very curious properties in *Xanthium strumarium*, a weed so nearly allied to the Bathurst burr as to be easily mistaken for it, and having all the destructive characteristics of its congener. An extract from this plant is deadly poison, and produces all the symptoms exhibited by the administration of strychnine. Amongst other useful drugs Dr. Bancroft finds in the Queensland cassia an excellent substitute for senna, in ironbark gum a very useful astringent, and in sassafras bark a valuable aromatic. But the most interesting of all Dr. Bancroft's observations are those which he has made on some of the animal parasites affecting the human subject in Queensland. This department of medical science is all the more interesting and important when it is remembered how fearfully some parts of the Colonies of South Australia and Victoria have been scourged by hydatids, and how the influx of Chinese has awakened such just apprehensions of the spread of leprosy. I will give Dr. Bancroft's discovery in his own words :—"Another parasitic disease spreading in the colony is the blood worm, *Filaria sanguinis*, of Lewis, known now to be associated with a numerous list of morbid conditions. This is an embryonic worm about 100th of an inch long. The parent of it is located on lymphatic vessels or in cysts measuring from three to four inches long and about as thick as a coarse hair. It was first discovered in Brisbane and was named by Professor Cobbold, *Filaria Bancrofti*. It is now considered to be the cause of the elephant leg of India, and there are grounds of belief that it causes leprosy. In Amoy a very large number of Chinese are afflicted with the parasite, and the learned Dr. Manson discovered that this mosquito in sucking the blood of a diseased person swallows the embryonic worm that floats in the blood." Dr. Manson found 120 of these worms in the blood contained in one mosquito. Dr. Bancroft has never counted more than 45 in any mosquito that he was able to examine from diseased persons in Brisbane. He adds the following conclusions as to its life history :—" The mosquito swallows the blood infested with the parasite, and subsequently contaminates the water with the same in laying her eggs. Persons drink of the water containing the *filariæ*, and becomes subject to one or more of the diseased conditions known to be caused by this parasite. The only protection against this frightful pest which gives a taint to the blood, and which becomes hereditary, is to drink no water which has not been boiled and filtered. The learned doctor concludes that this parasite has been introduced into Queensland

He has also found three species in the blood of a magpie called by the natives "curwang," probably *Grallina Australis*, and another in the Regent bird, which takes up its abode in the heart. This is a field for microscopy, which should be taken up, as the blood of any animal infested with a parasite shows its state readily on examination, even with low magnifying powers. It would be of the utmost importance to find what birds are thus infested, because none of them can be safe as articles of food.

The zoology of Australia has received a very valuable addition to its literature in the Prodromus of the National History of Victoria, by Professor M'Coy, of which three decades are already published. It has been the endeavour of the distinguished author of these publications to illustrate as many genera as possible of the living fauna, and he deals at first usually with species of special interest, of which good figures do not exist, or are not easily accessible. Like all the publications issued by the Professor from the National Museum of Victoria, they are most elaborate. The drawings are in the very highest style of excellence, and the descriptions full and complete. They leave nothing to be desired except that we had more of them. While such publications do great credit to the artistic skill of the Professor and his assistants, they redound equally to the liberality of the Government of Victoria. I have already referred to the successful efforts of Professor Tate on behalf of the Philosophical Society of South Australia. He has, ever since his arrival in Adelaide, been indefatigable in trying to develope our knowledge of the zoology and geology of the country. His papers comprise contributions to most of the colonial scientific journals, and a particularly valuable monograph of the recent and fossil *marginellidæ*. In his annual address before the Society he has given a notice of the general progress that has been made towards the knowledge of the Natural History of South Australia. His account is exhaustive but, to use his own words, we are brought face to face with the fact that there are still many missing pages, even chapters, in its history, and our knowledge in many departments is mere technical barrenness. No person need plead the want of a subject either in South Australia or any other portion of the Continent, and it is a source of great consolation to those who have been long, and, as as it were, singlehanded, in the field, to hail the accession of such an industrious and learned naturalist as Professor Tate. He has succeeded in enlisting the sympathies of many, and the recent papers by Messrs. O. Tepper, H. H. Hayter, G. Scoular, W. T. Bedwall, and Dr. Schomburgh are a proof of the new life he has infused into the men of science of the Adelaide Colony. I refer especially to the anniversary address of Professor Tate to the Adelaide Philosophical Society, read at the close of last year's session as a compendium of all that has been written on the geology of South Australia, incorporated with the Professor's personal observation, and with what he has been able to gather by correspondence with colonial geologists. This is an elaborate essay, of a character much like the late Rev. W. B. Clarke's description of the Natural History of the country round the head of the Australian Bight, which he terms the Bunda Plateau. The latter paper is from the Transactions of the Adelaide Philosophical Society, but I advert to it as one of the most important publications of this year. This country has been always one of singular interest, and has never been examined by a really scientific man until visited by Professor Tate. In his paper he gives the natural divisions of the country, which he was commissioned by the South Australian Government to examine, with a view to its adaptability to the artesian well system. He made a journey with a party, all riding camels, spending six weeks in the examination of the plateau. The result was not satisfactory as far as artesian wells were concerned, but we have from the professor a very elaborate account of the geology and zoology of the district.

In Tasmania Mr. W. Legrand still labours amongst the *Mollusca*, a sub-kingdom in which he has been for years a constant and most painstaking observer. He has now two zealous coadjutors in Messrs. Petterd and Johnston. The former has just published a very creditable monograph of the land shells of Tasmania. Mr. R. M. Johnston labours in almost every department of natural history. His new observations in geology and important discoveries in Tasmanian natural history are contained in the "Proceedings of the Royal Society of Tasmania."

Turning now to the department of Geology I find that every Colony is doing much towards the development of the knowledge of our rocks and rock formations. Considering how much the mineral resources of the colony are identified with this, and how much accurate geological knowledge tends to develope these resources, no activity on the subject would be excessive. In North Queensland Mr. Jack has just completed valuable maps and reports on the geology of the Bowen coal-field, the Charter's Towers diggings, and the general geology of the North. It may be worth while to mention an interesting fact which the examination of the Bowen coal-field has brought out; the deposition of the coal in that locality, has been followed by an extensive outpouring of volcanic rocks, and the beds of lava lying above the seams have burnt away all the carbonaceous matters, and entirely destroyed them. Mr. Jack is now away on a six months' prospecting tour between the Normandy River and Cape York. This is an entirely unexplored tract, and no doubt his investigations will result in the discovery of new fields of industry and resources for the colony of Queensland. Having just returned from a lengthened examination of the coast line and part of the interior from Trinity Bay to near Princess Charlotte's Bay, I hope to place some of my observations before the Society during the ensuing year, and some of them will, I think, be found of considerable interest. In New South Wales the geology of the colony is receiving very careful development at the hands of Mr. C. S. Wilkinson. Having had the advantage and pleasure of some excursions in company poor sulphides (*i.e.* 6 per cent.) found with gold in excess of antimony is added a bronze like metallic alloy, which is brittle and which the amalgam will not touch. It forms into flaky crystals which even after long continued grinding retain the scale-like character and are thus easily carried away by water. Mr. Newbury roasts the ore with salt or other chloride, and when raised to a red heat exposes it to a jet of steam, by which the gold is reduced to a bright clear state, easily affected by the amalgam.

The researches of Mr. A. W. Howitt, F.G.S., on the microscopical characters of the diorites and granite of Victoria are of the highest interest. They show careful observation and extensive knowledge of the subject, and are made in a department of knowledge where hitherto very little has been done. Mr. Ulrich has on several occasions drawn attention to the necessity of this kind of study of our rocks. It has been shown that reefs become richer near some dykes, but not all. By the examination of carefully prepared microscopical sections he has shown that the rocks which have a good influence are of one special variety. They are *hornblendic* and true *diorites*, while all the rock masses and dykes which are of *augitic diabose* have been proved to be non-auriferous as well. Until Mr. Ulrich's observations, all these rocks were classed and mapped as *diorites*, and they cannot be distinguished except in microscopical sections.

I have thus passed rapidly over the principal fields of science which are at the present moment receiving every elucidation from our colonial workers. I have purposely abstained from any reference to our own Society's work, as the journal of our proceedings is a sufficient evidence of that. But I do not think I ought to allow this address to conclude without an expression of my humble appreciation of the labours of my colleagues in this colony, from whom I have frequently received considerable aid and always much kindness and sympathy. The zeal and public spirit of the Hon. William Macleay have made this Society what it is, while his investigations in ichthyology and among the class *reptilia* are worthy of a family that for many generations has given most distinguished votaries to science, from the founder of the Royal Linnæan Society of London to the founder of the Linnean Society which I am addressing to-day. I look with a justifiable pride on the labours of others in their various departments when I bear in mind the circumstances and remoteness of so young a Colony as ours. Mr. E. P. Ramsay, in ornithology; Mr. J. Brazier, in conchology; Dr. Alleyne, Messrs. Stephens, Haswell, Masters, Burton Bradley, Baron Maclay and Meyrick, Dr. Cox and Dr. Read, have all in their various departments helped to give a world-wide reputation to our publications. It is with the greatest regret that I refer to the loss our Society and science have sustained by the death of the Count de Castelnau, the news of whose lamented decease has just reached us. The pages of our proceedings and the pages of most of the colonial rather than remove the reputation it has ever had for its exceptional and peculiar character. Of all the zoological provinces in the world perhaps the Australian is the most interesting, the most peculiar, and, may I not add, the most beautiful. We may compare it to an edifice—a temple, the plan of which has been determined, but the details of whose structure we have not yet made out in all their fanciful originality and proportional beauty. When we have not only mastered the style and perfection of its architecture, but also have penetrated the building, and seen its perfect adaptability to the purposes for which it has been raised, we shall be well repaid for our labours, and realize the benefit which those who have helped to make it known have thus conferred upon mankind.

At the conclusion of the address a vote of thanks was proposed by the Hon. W. Macleay, M.L.C., and seconded by W. H. Archer, Esq., and carried unanimously; and the address was ordered to be printed.

The Treasurer then presented his financial statement, from which it appeared that the receipts of the year were £521 14s.; expenditure, £400 9d. Balance £121 13s. 3d.

The Hon. W. Macleay then proposed, and R. C. Walker, Esq. seconded the re-election of the Rev. J. E. Tenison-Woods, F.G.S. etc., as President of the Society, which was carried *nem. con.*

The rest of the business of the Annual Meeting was postponed to Wednesday, February 25th.

ADJOURNED ANNUAL MEETING,

WEDNESDAY, FEBRUARY 25th, 1880.

The President, the Rev. J. E. Tenison-Woods, F.G.S., F.L.S., &c., in the Chair.

The minutes of Meeting of 28th January were read and the meeting proceeded to the election of Officers for the current year; which resulted as follows:—

President:

Rev. J. E. Tenison-Woods, F.G.S., F.L.S. Etc.

Vice-President:

W. J. Stephens, Esq., M.A.

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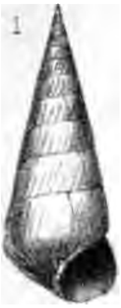

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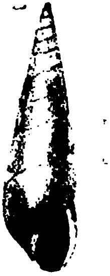

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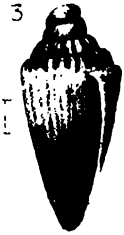

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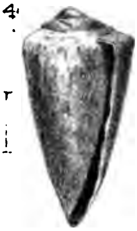

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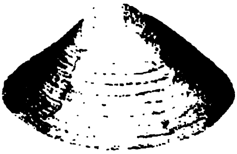

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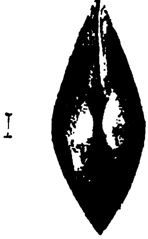

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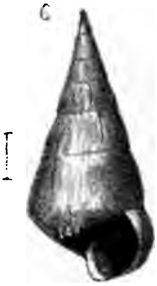

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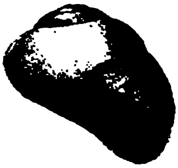

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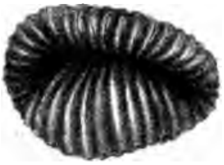

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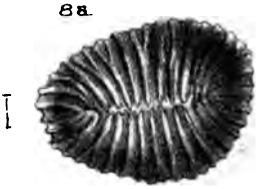

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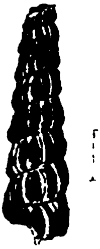

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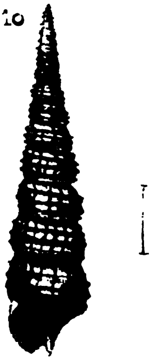

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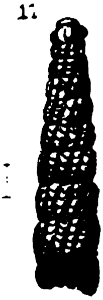

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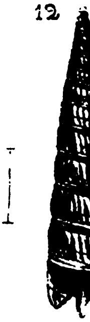

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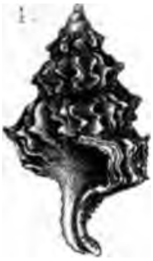

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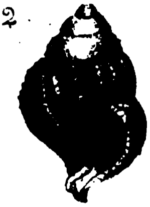

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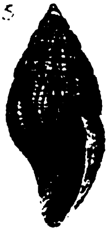

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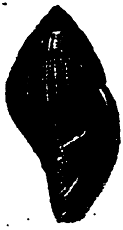

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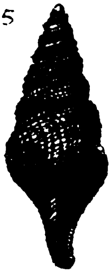

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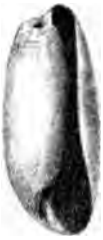

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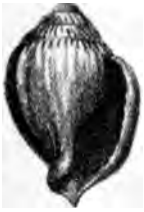

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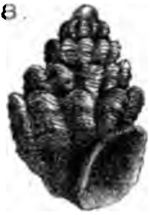

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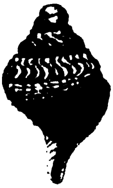

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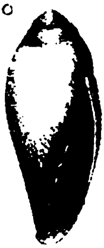

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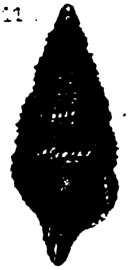

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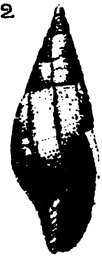

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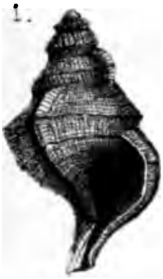

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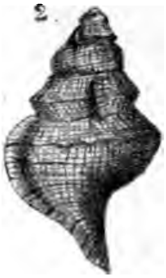

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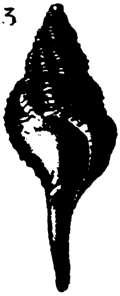

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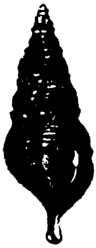

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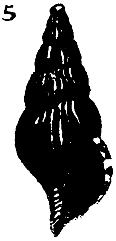

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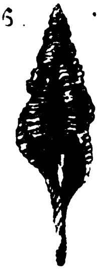

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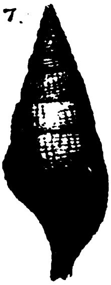

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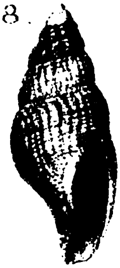

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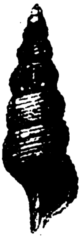

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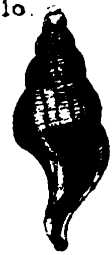

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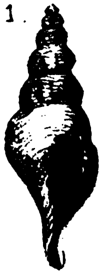

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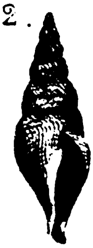

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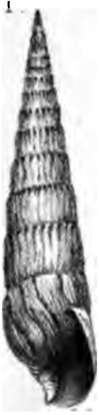

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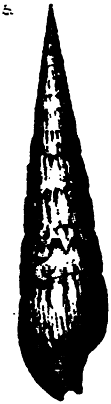

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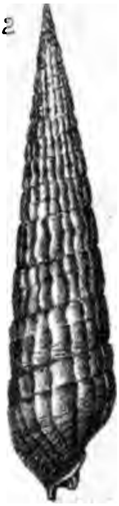

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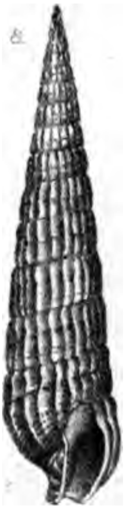

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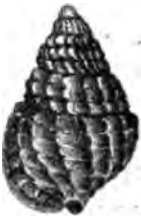

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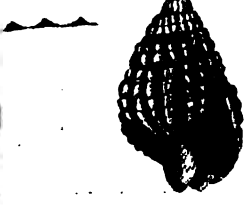

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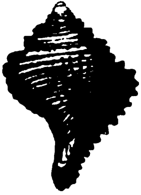

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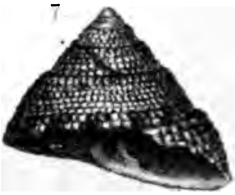

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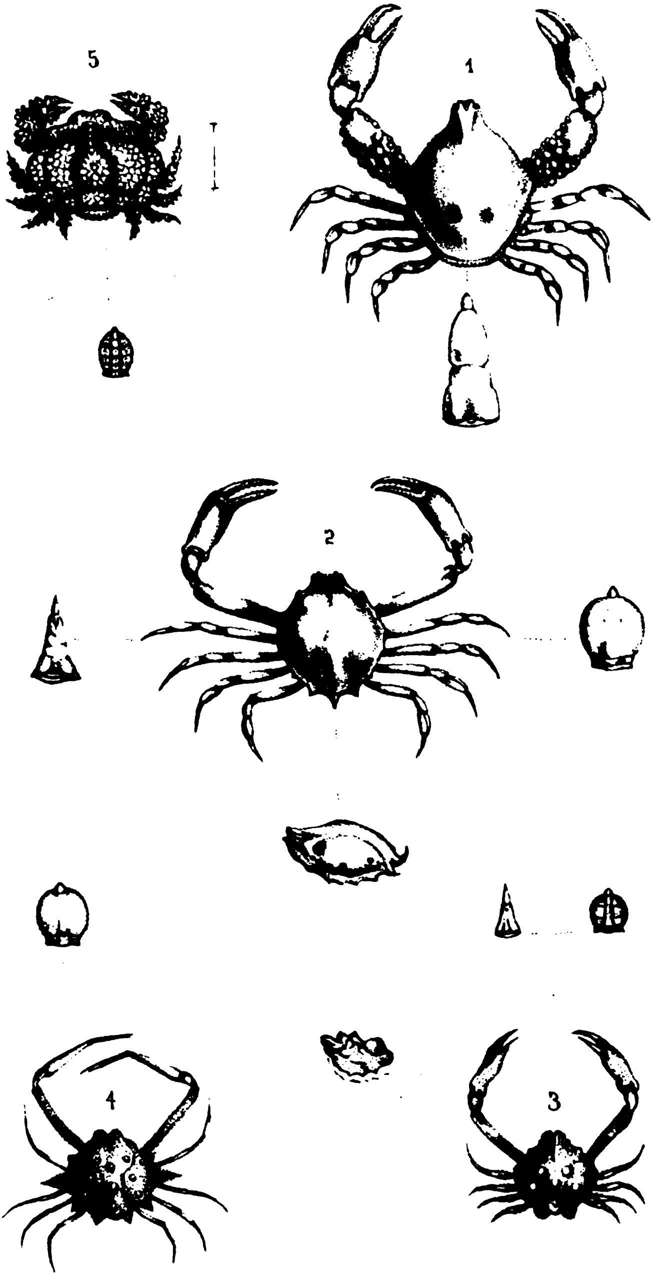

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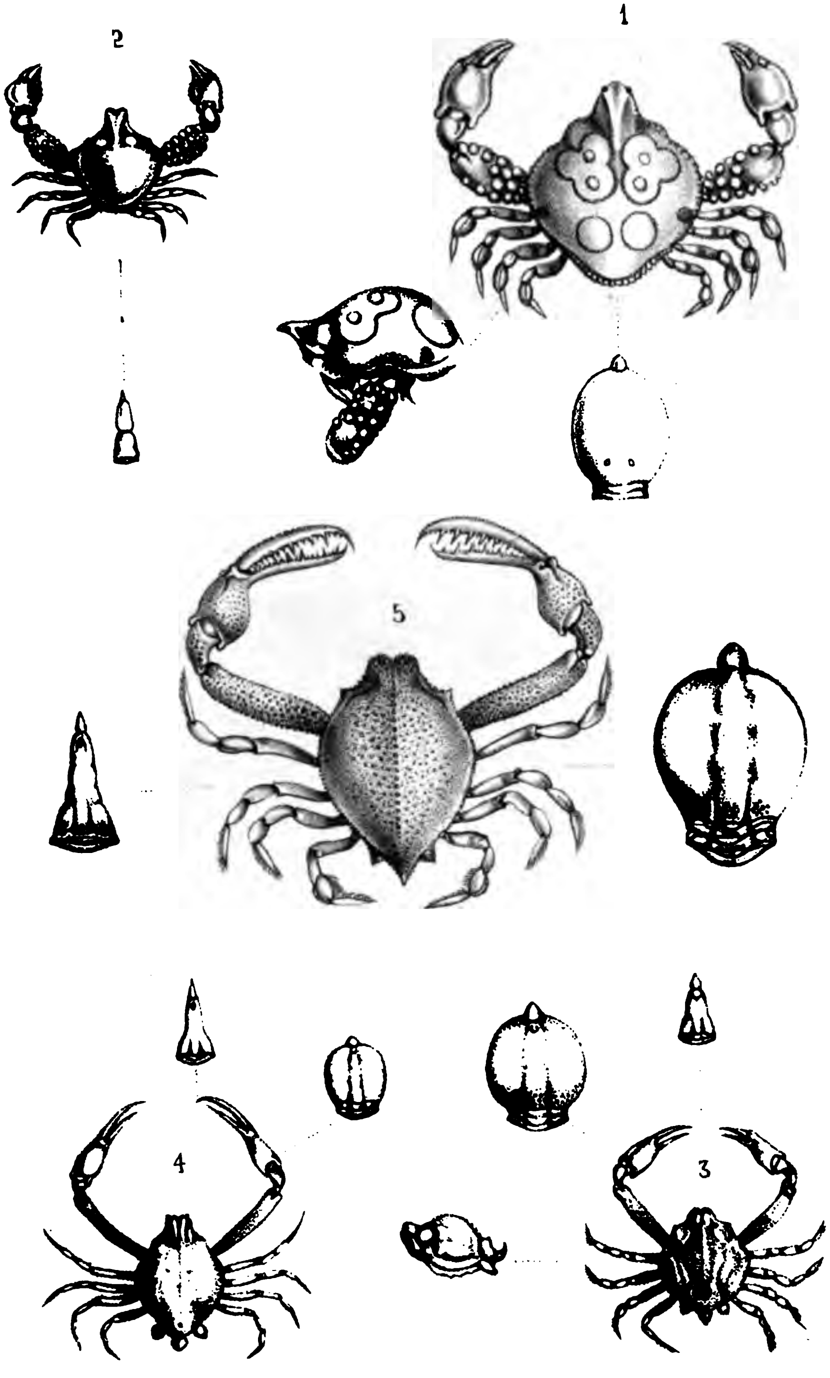

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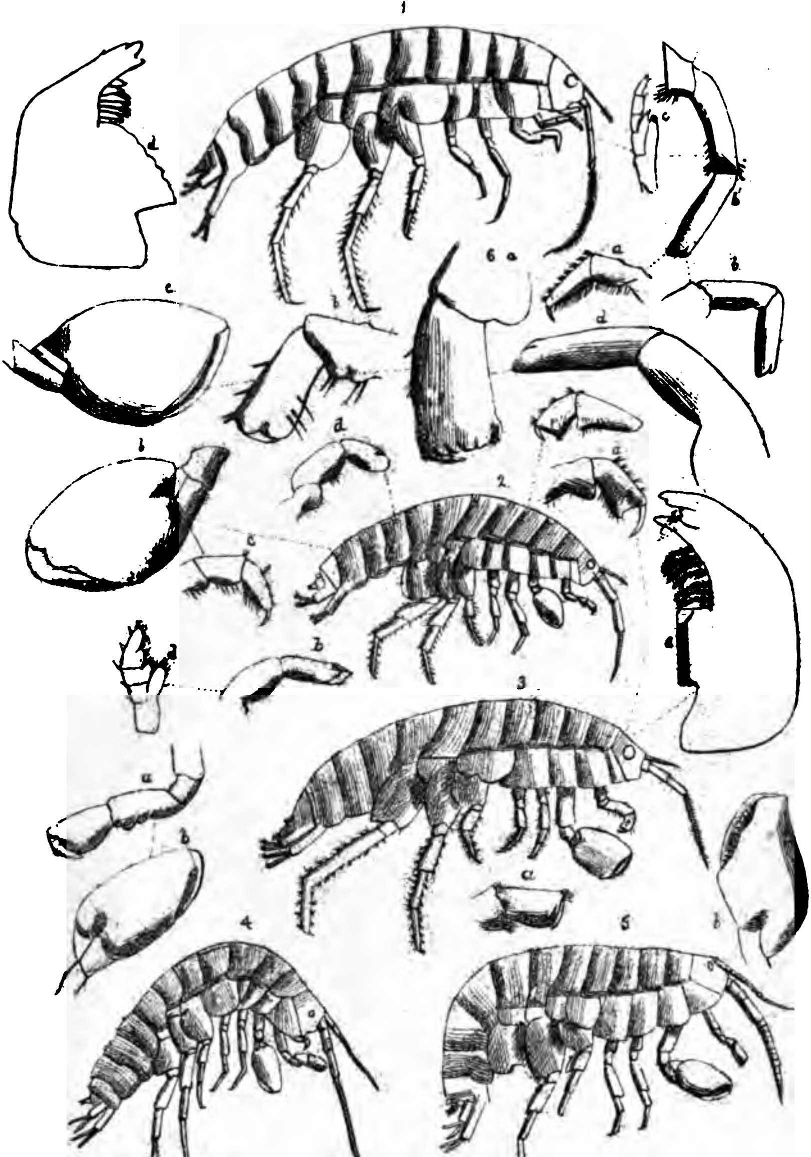

William A. Haswell delt.

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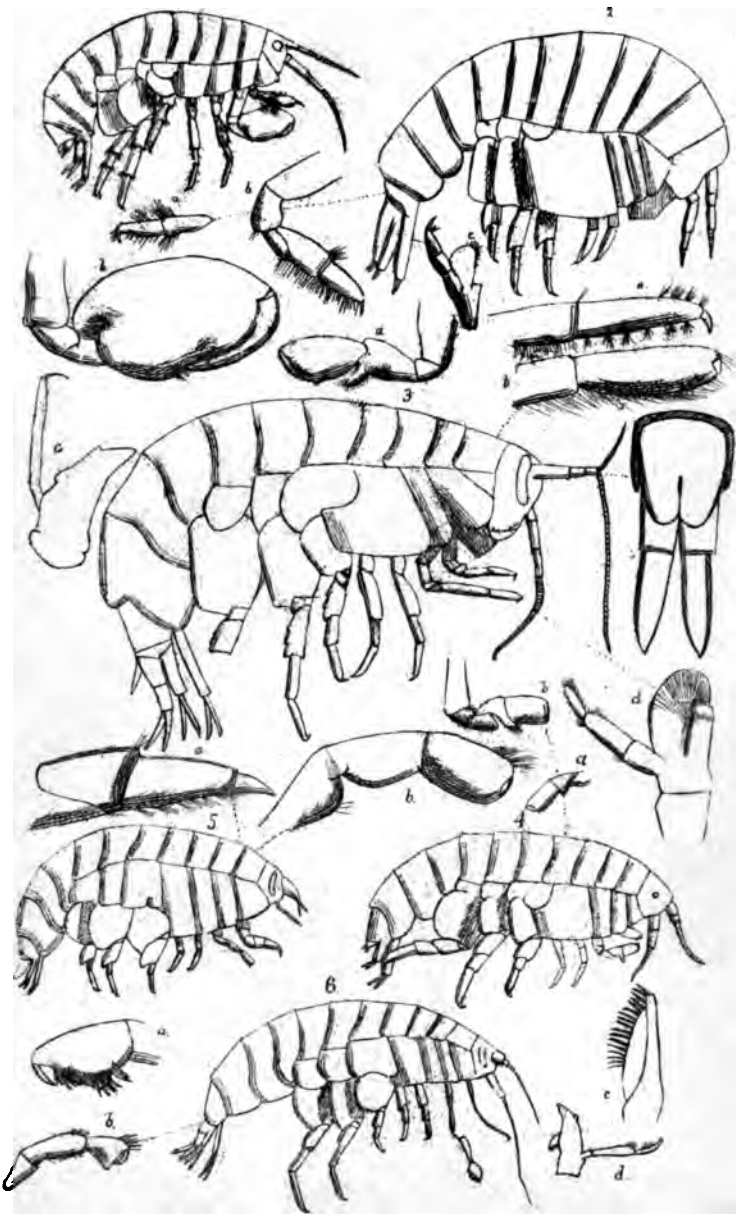

William A Haswell delt

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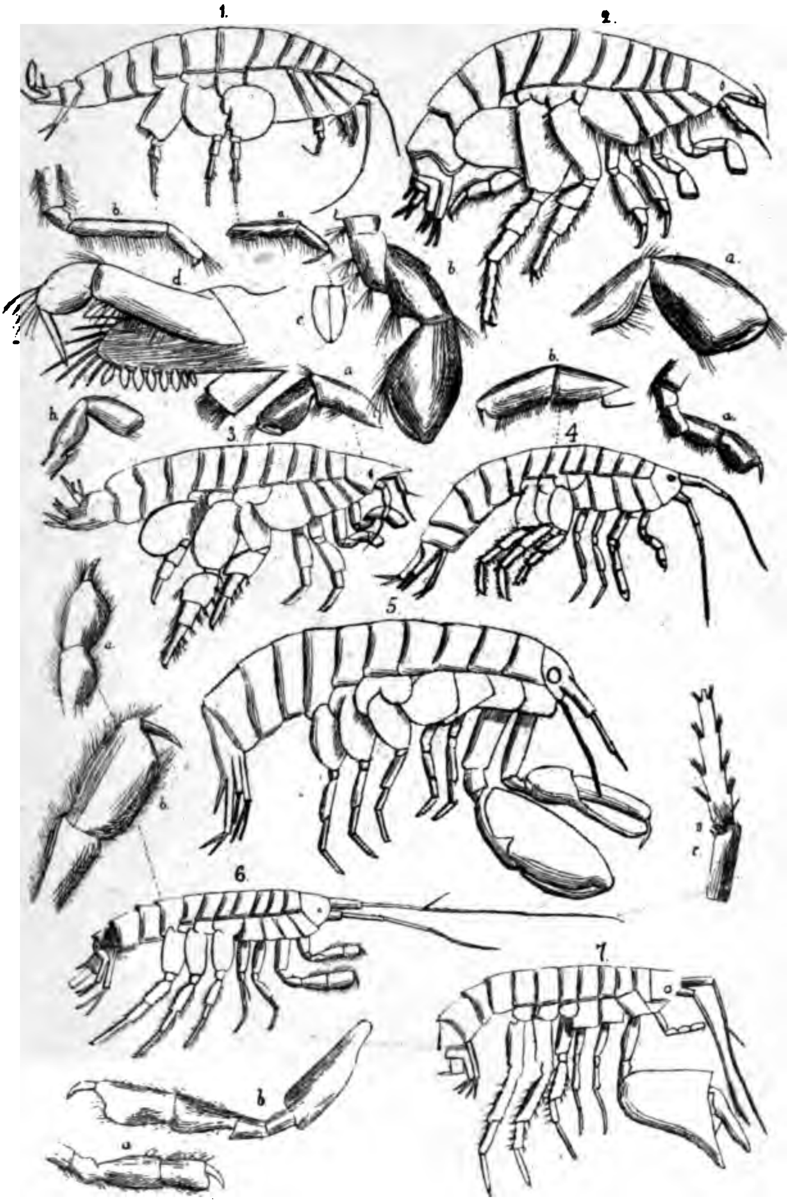

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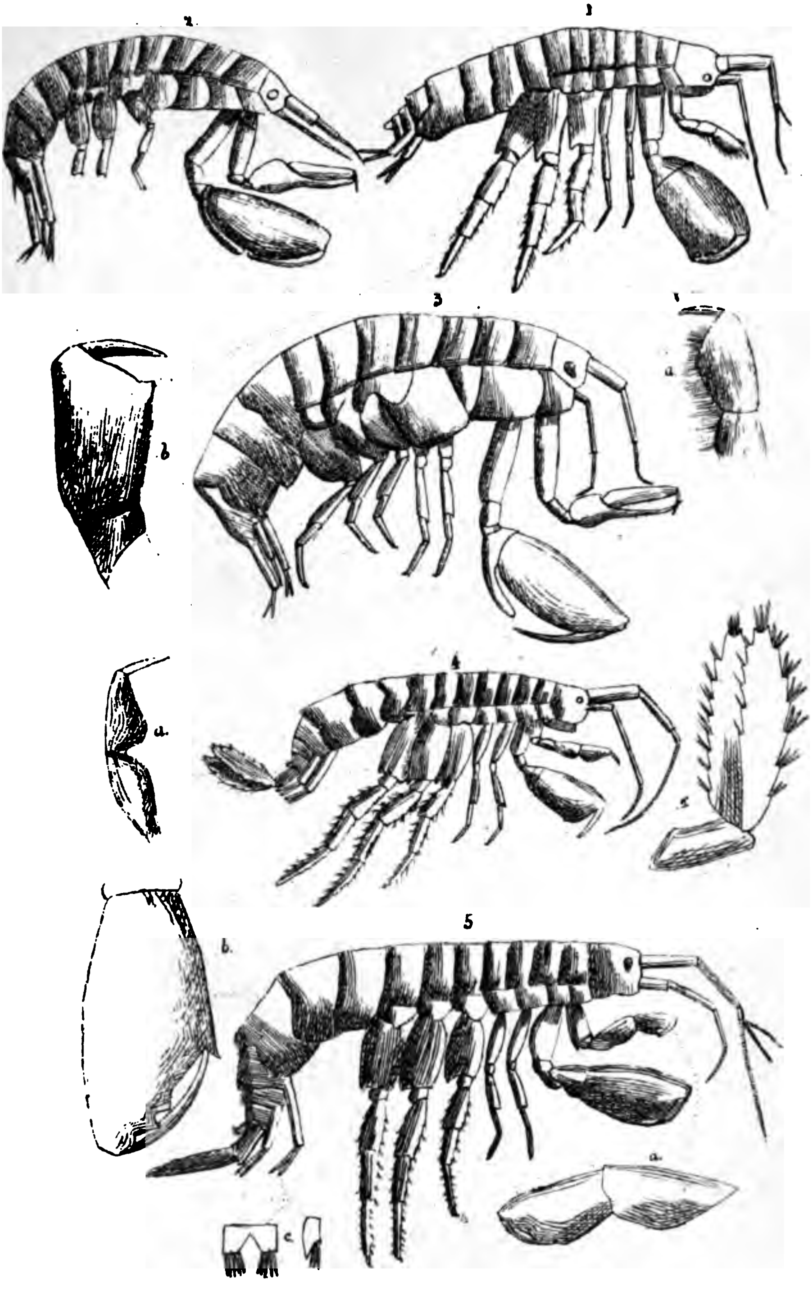

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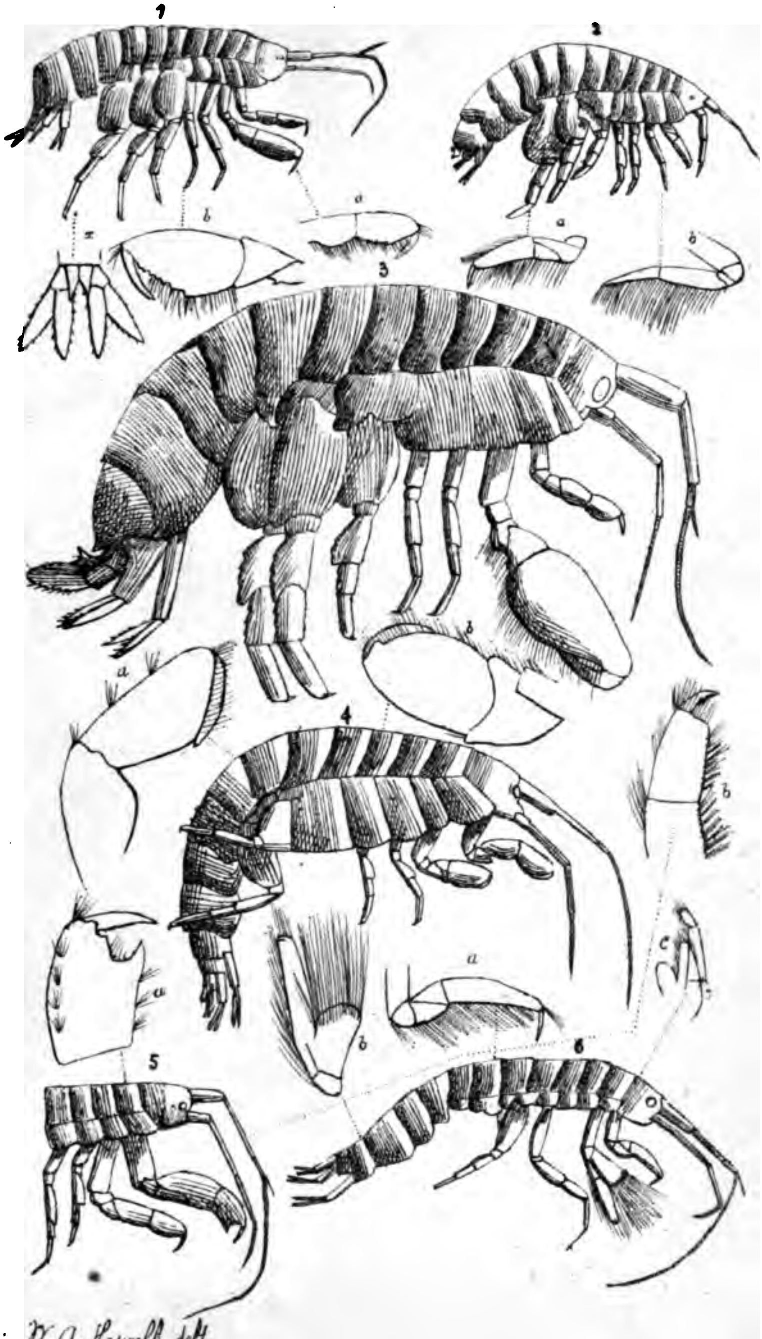

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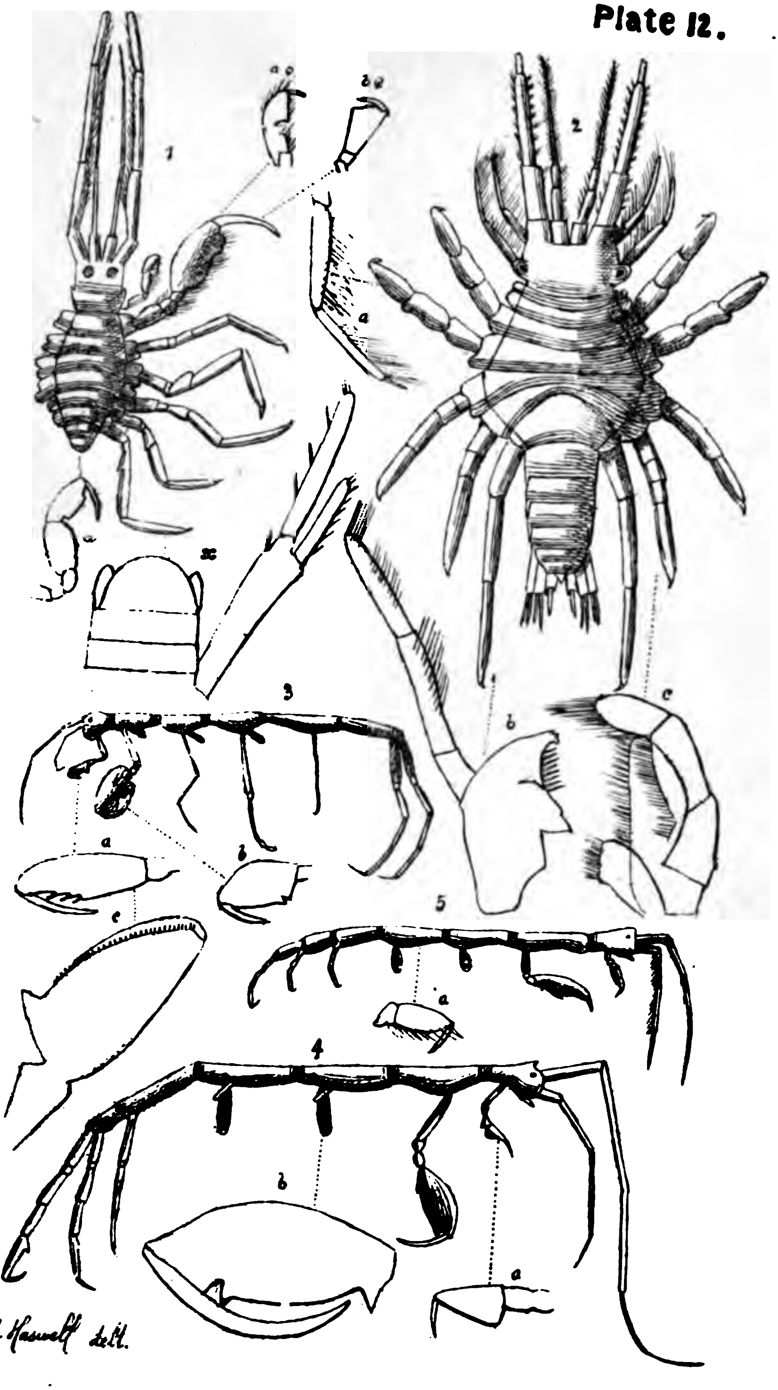

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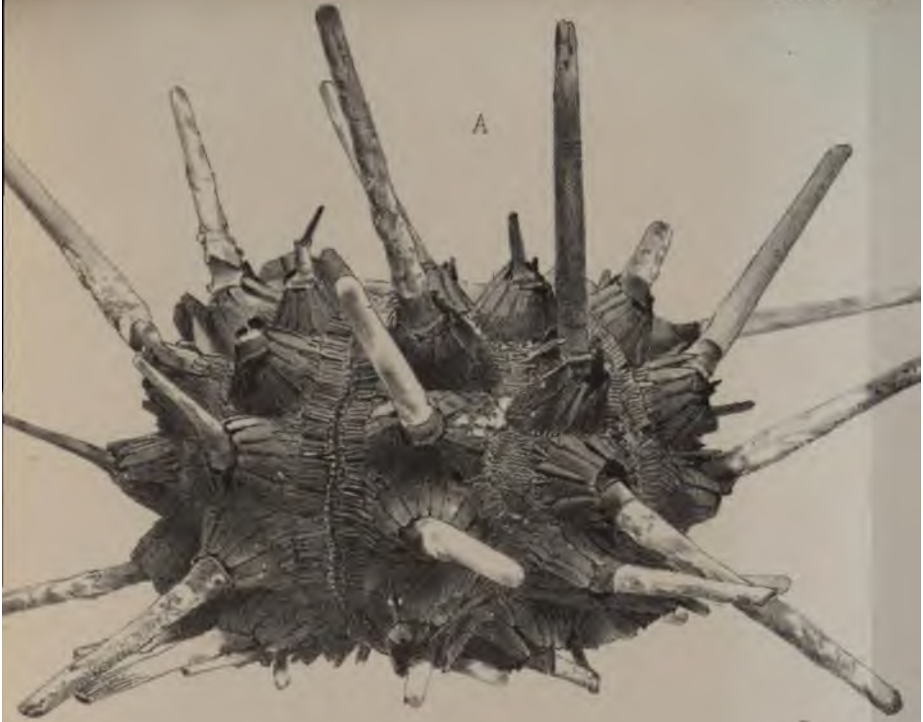

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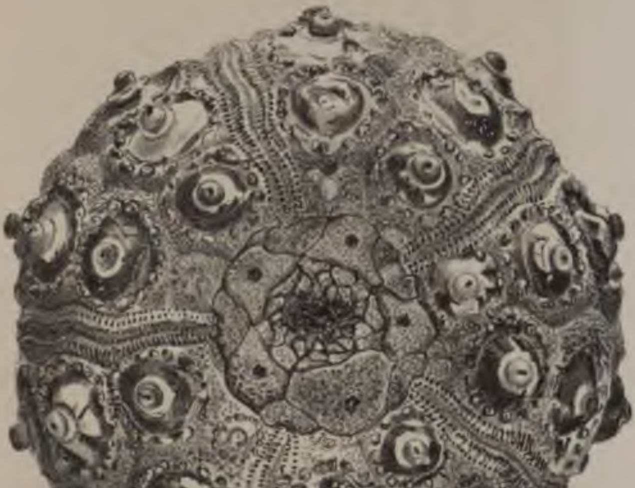

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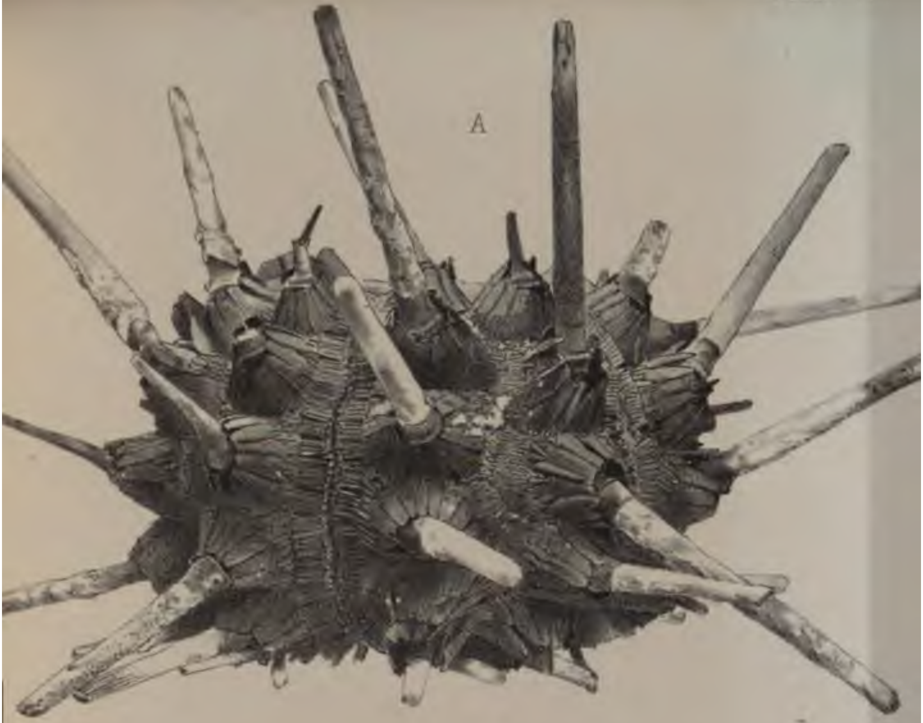

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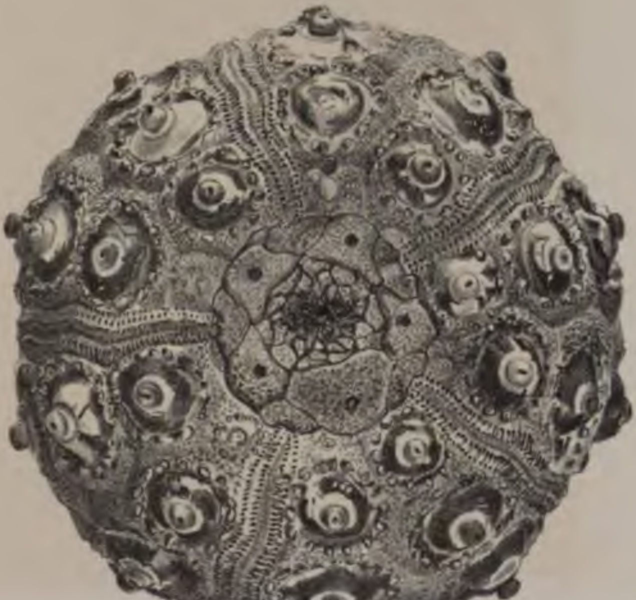
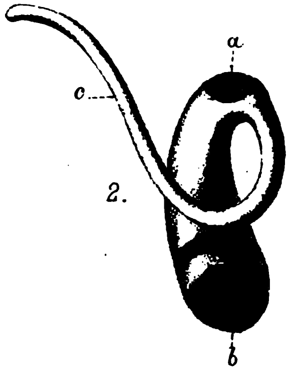


Lin. Soc., Vol. 4

Pl. 15



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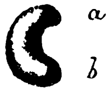

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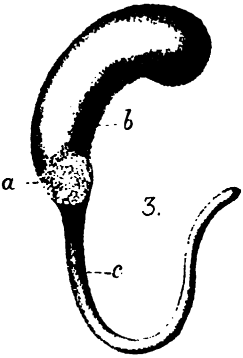

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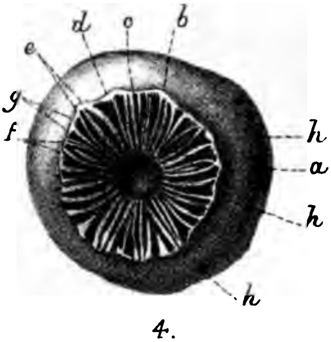

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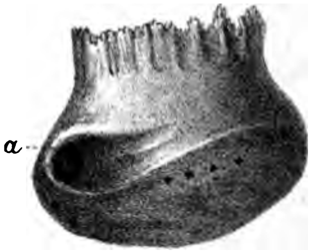

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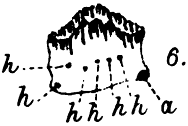

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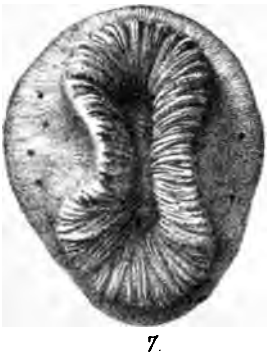

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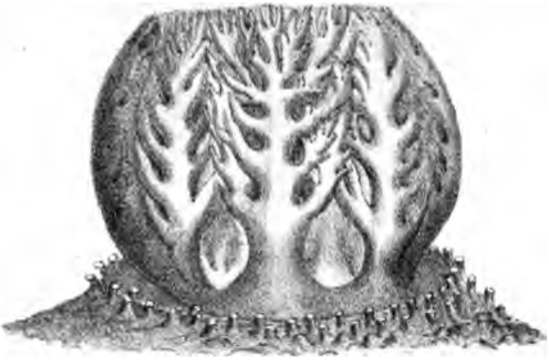
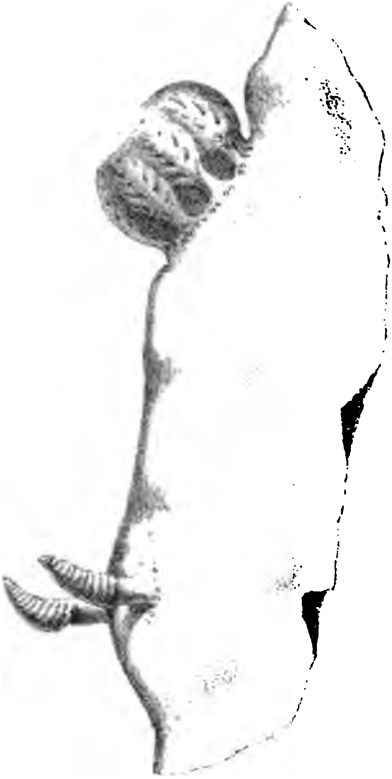
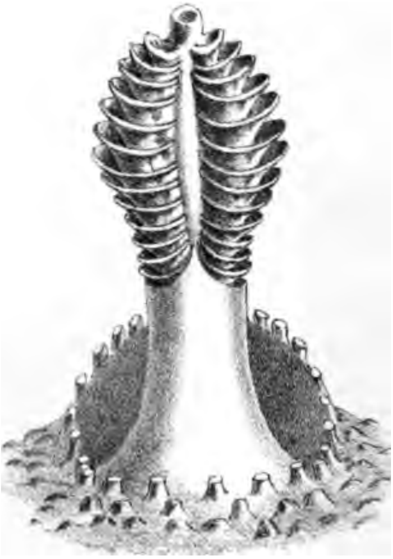
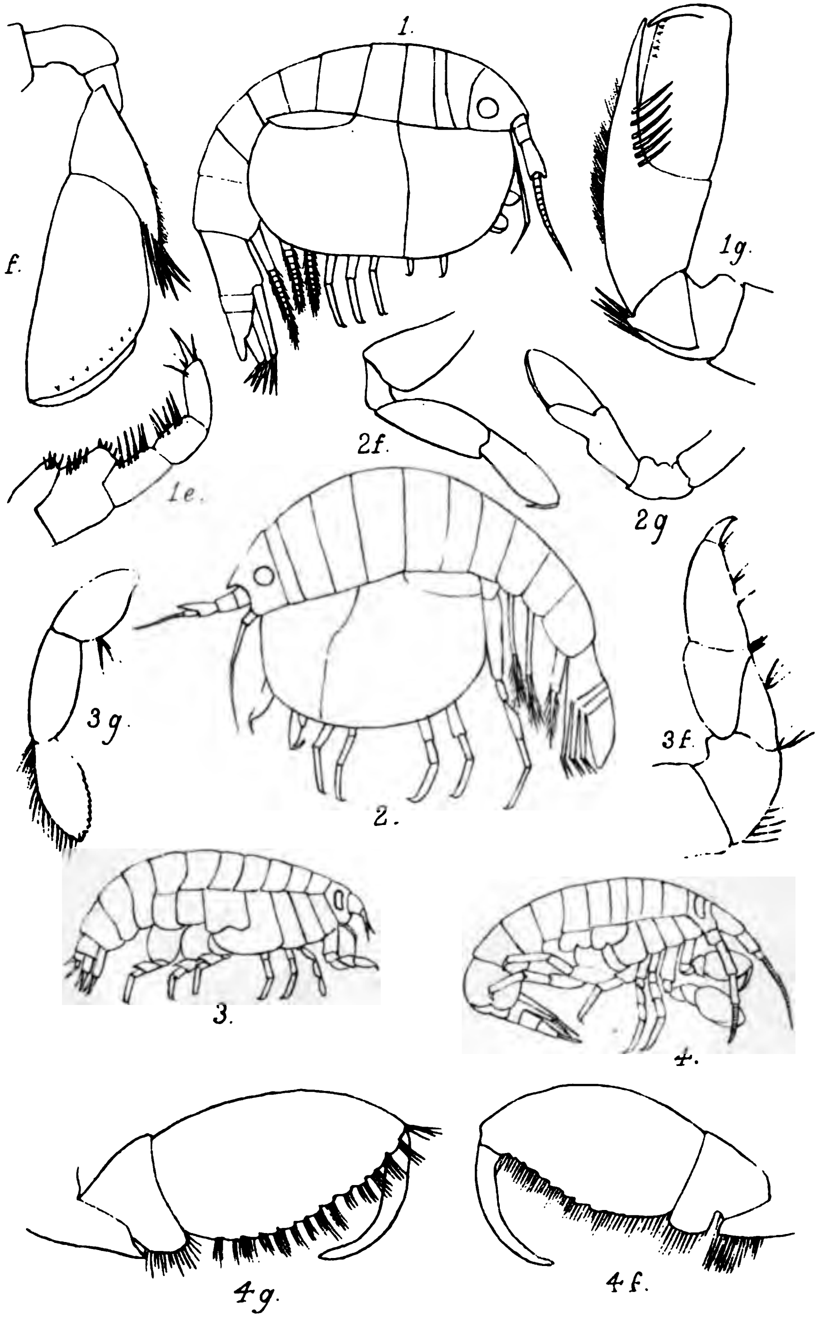
LIN. SOC., VOL. 4

Pl. 17





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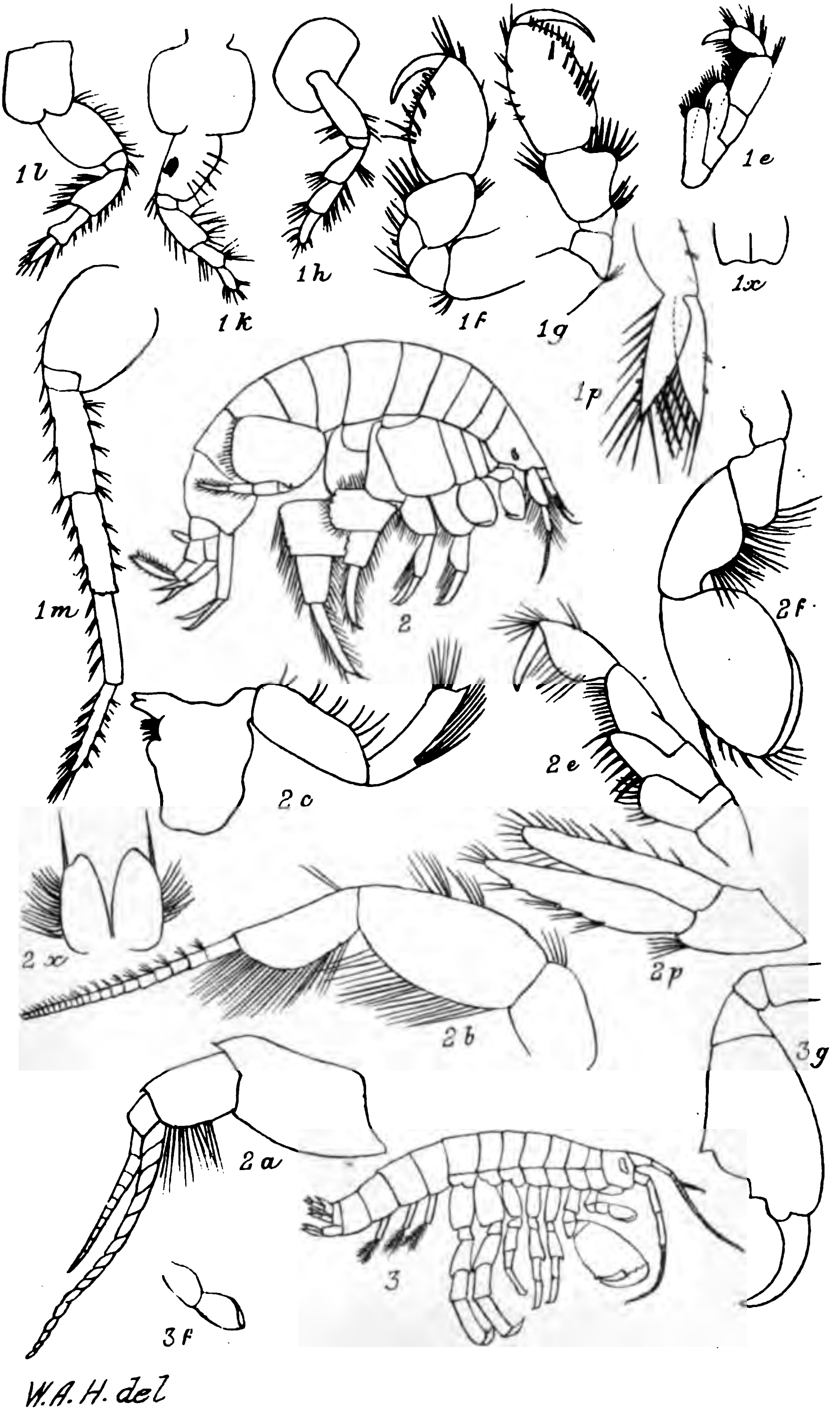
Lin. Soc., Vol. 4

Pl. 19



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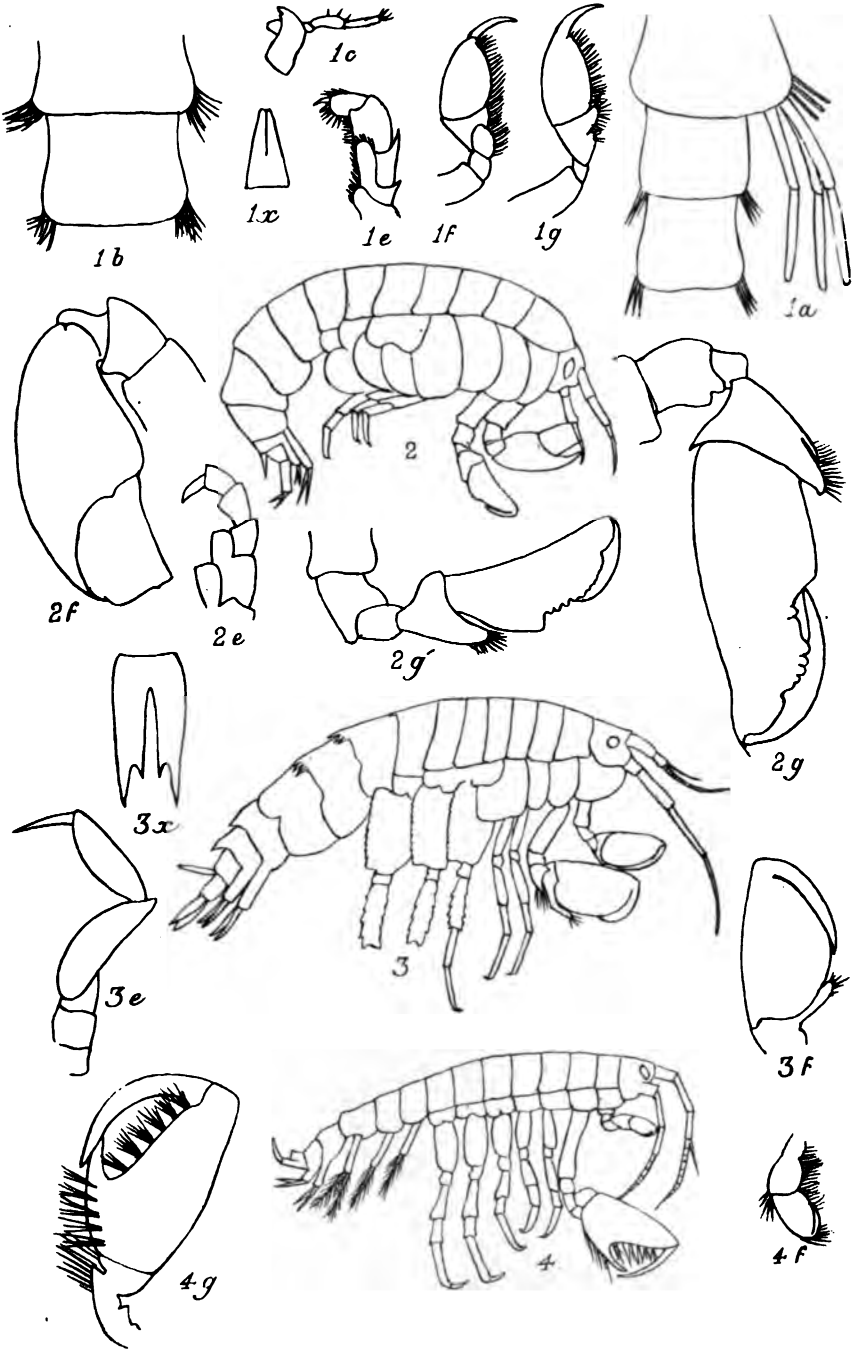
LIN. SOC., Vol. 4

Pl. 20



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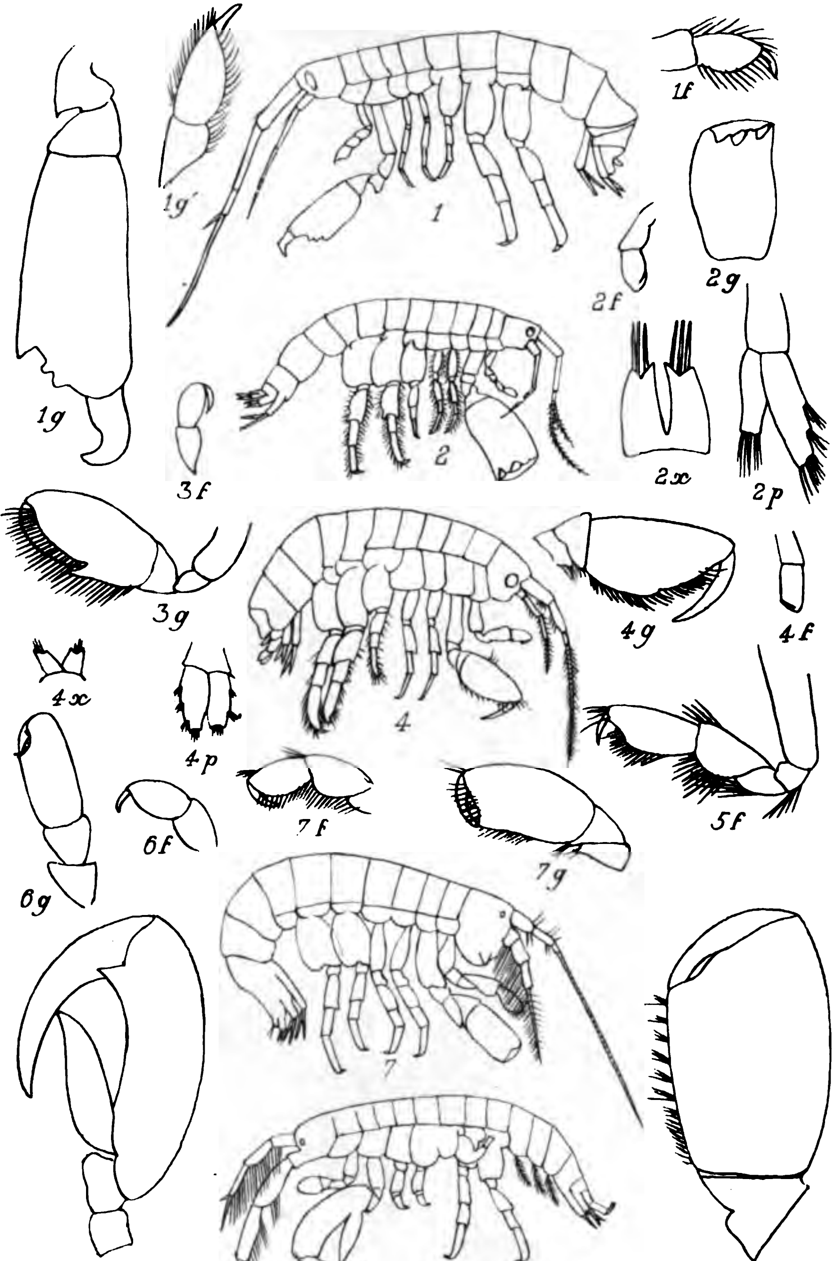

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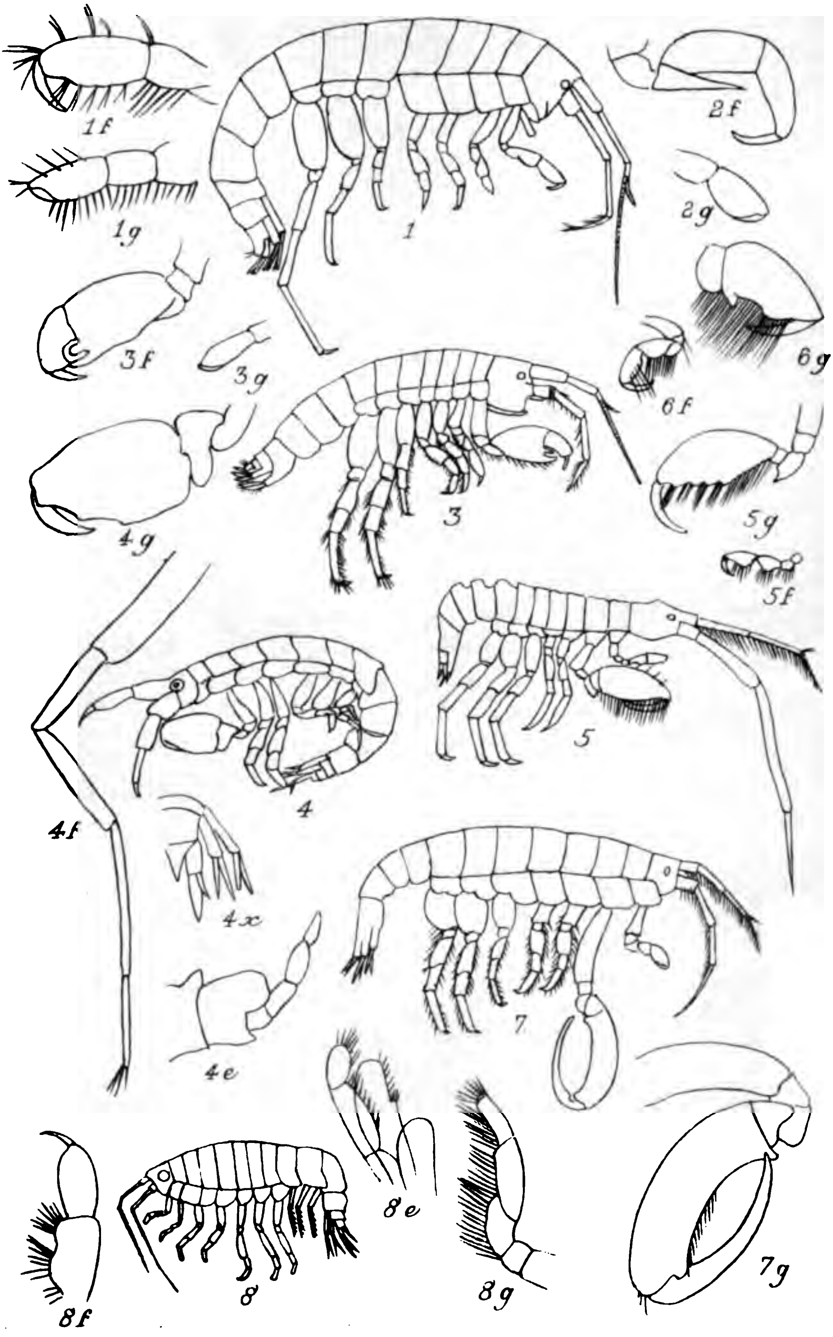
LIN. SOC., VOL. 4 Pl. 22



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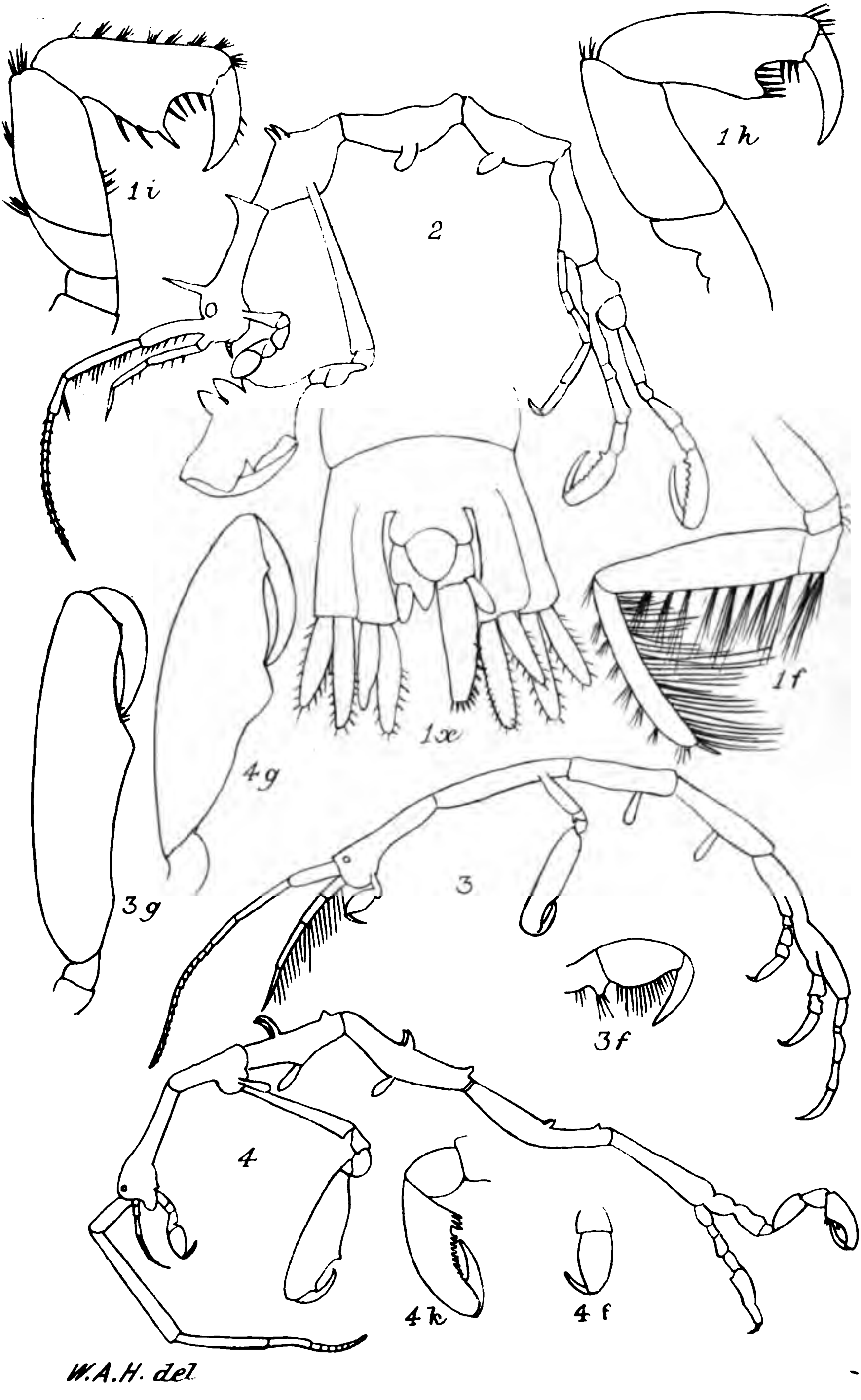
LIN. SOC., Vol. 4

Pl 23



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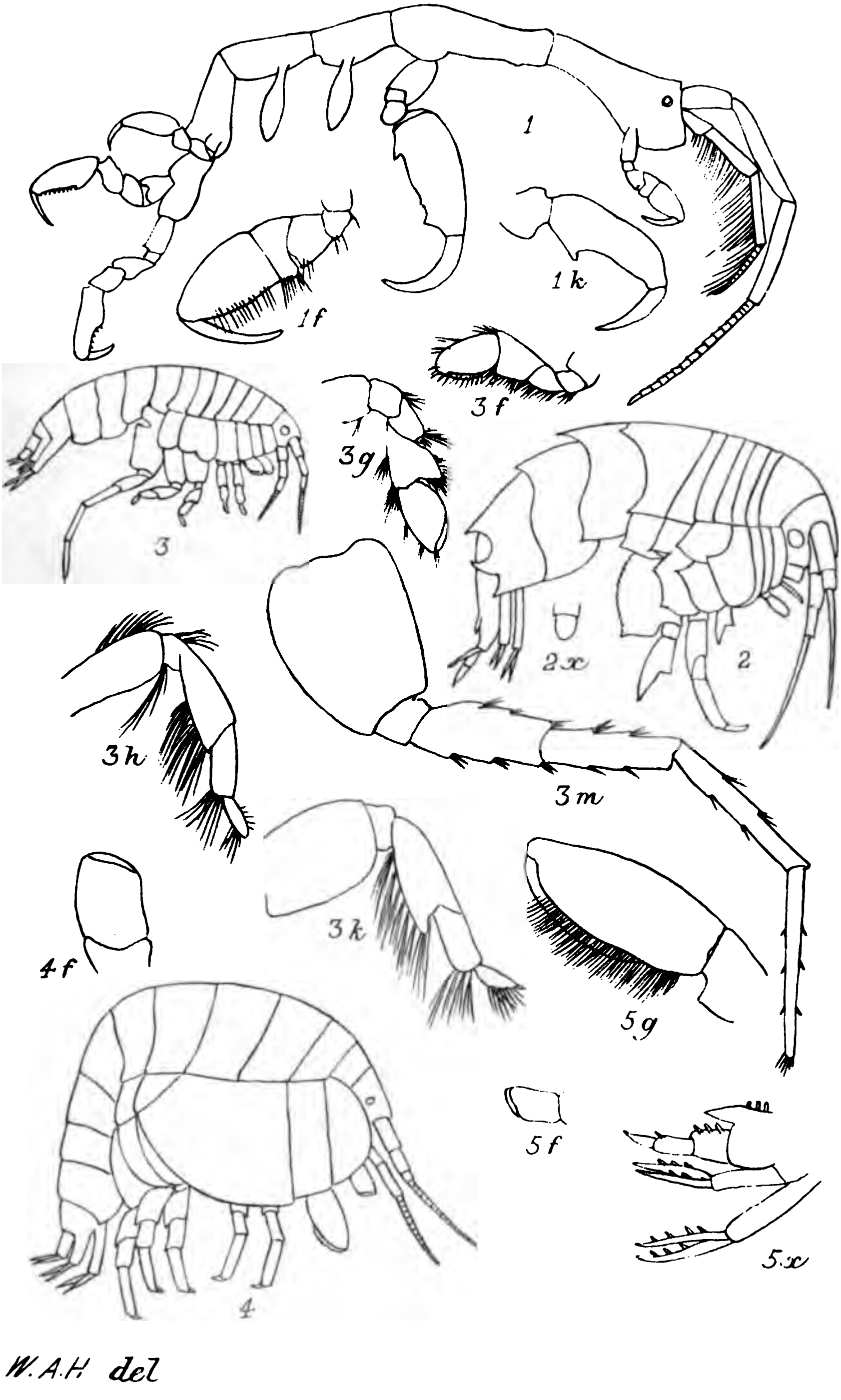

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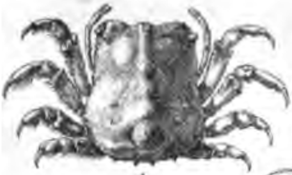
LIN. SOC., VOL. 4. PL. 25.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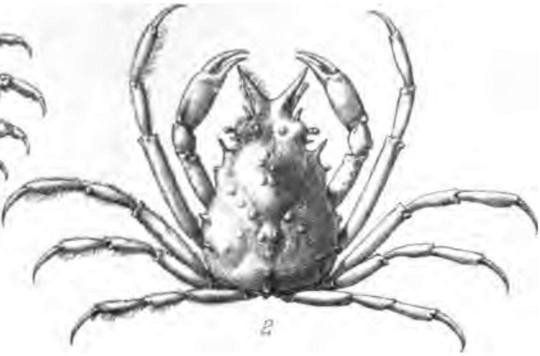
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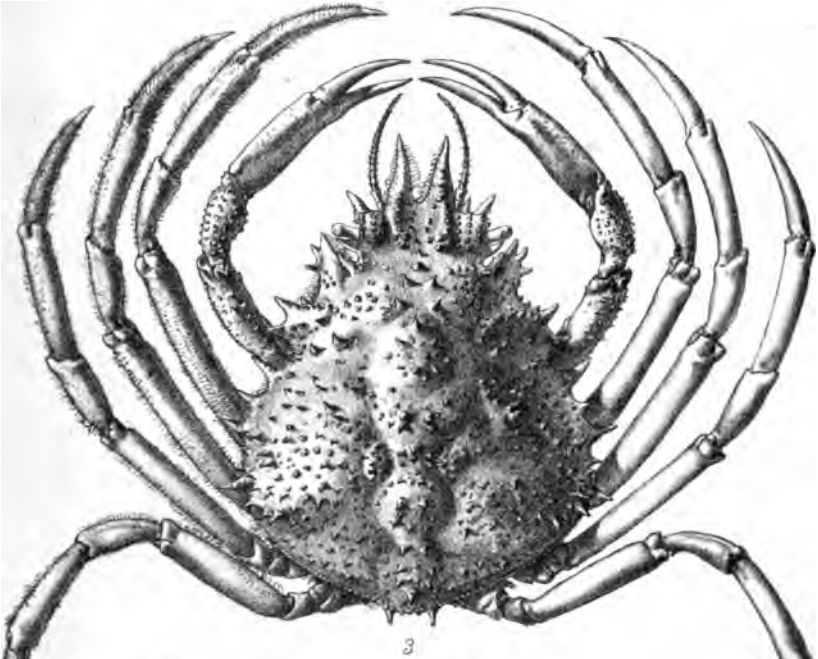
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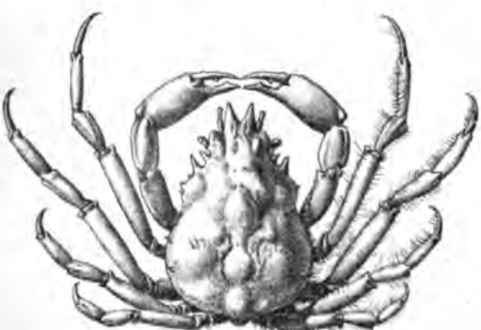
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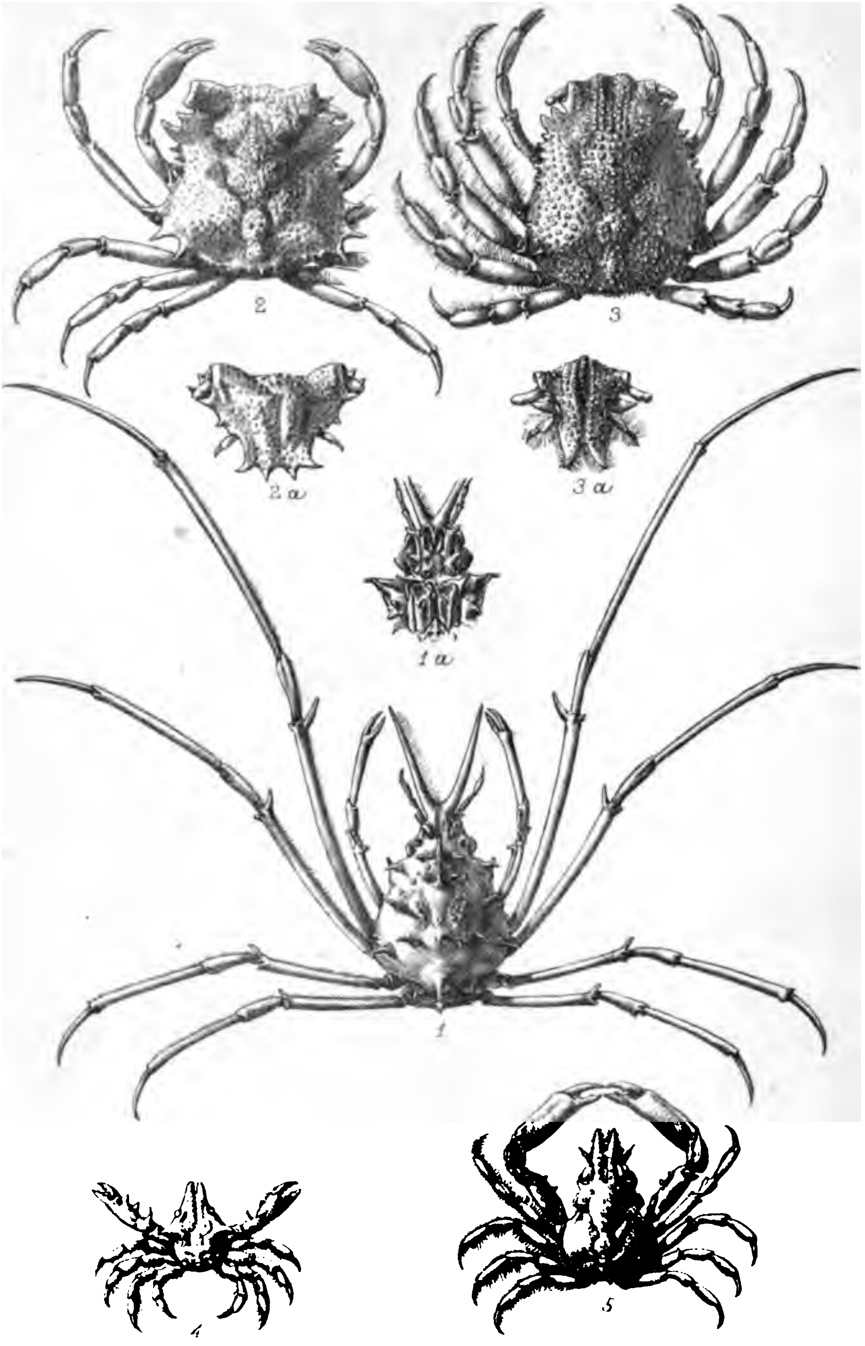

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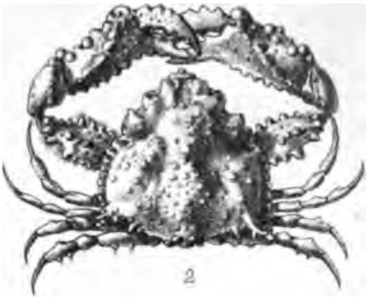
LIN. SOC., VOL 4. PL. 27.



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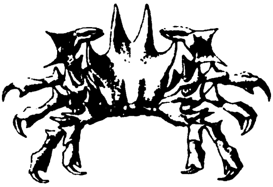

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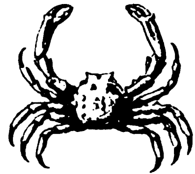

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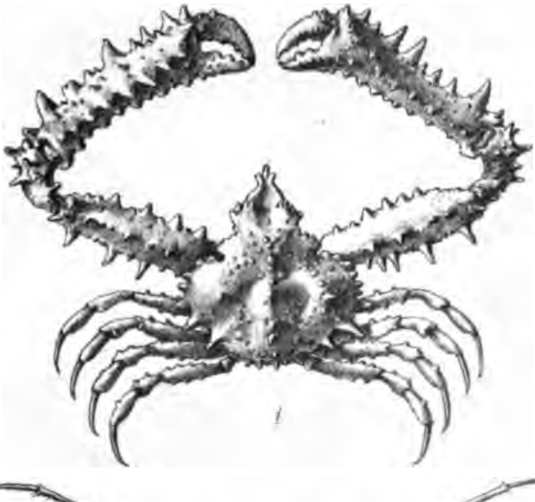

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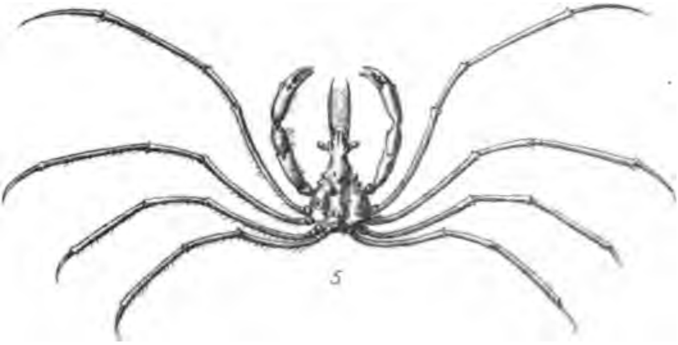

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S. Sedgfield del. et lith.

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